



Economics

Teachers' Guide

Grade 12

(Implemented from 2017)

Department of Commerce
Faculty of Science and Technology
National Institute of Education
Maharagama

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Message from the Director General ...

With the primary objective of realizing the National Educational Goals recommended by the National Education Commission, the then prevalent content based curriculum was modernized, and the first phase of the new competency based curriculum was introduced to the eight year curriculum cycle of the primary and secondary education in Sri Lanka in the year 2007

The second phase of the curriculum cycle thus initiated was introduced to the education system in the year 2015 as a result of a curriculum rationalization process based on research findings and various proposals made by stake holders.

Within this rationalization process the concepts of vertical and horizontal integration have been employed in order to build up competencies of students, from foundation level to higher levels, and to avoid repetition of subject content in various subjects respectively and furthermore, to develop a curriculum that is implementable and student friendly.

The new Teachers' Guides have been introduced with the aim of providing the teachers with necessary guidance for planning lessons, engaging students effectively in the learning teaching process, and to make Teachers' Guides will help teachers to be more effective within the classroom. Further, the present Teachers' Guides have given the necessary freedom for the teachers to select quality inputs and activities in order to improve student competencies. Since the Teachers' Guides do not place greater emphasis on the subject content prescribed for the relevant grades, it is very much necessary to use these guides along with the text books compiled by the Educational Publications Department if, Guides are to be made more effective.

The primary objective of this rationalized new curriculum, the new Teachers' Guides, and the new prescribed texts is to transform the student population into a human resource replete with the skills and competencies required for the world of work, through embarking upon a pattern of education which is more student centered and activity based.

I wish to make use of this opportunity to thank and express my appreciation to the members of the Council and the Academic Affairs Board of the NIE the resource persons who contributed to the compiling of these Teachers' Guides and other parties for their dedication in this matter.

Dr. (Mrs.) Jayanthi Gunasekara

Director General

National Institute of Education

Message from the Deputy Director General

Education from the past has been constantly changing and forging forward. In recent years, these changes have become quite rapid. The Past two decades have witnessed a high surge in teaching methodologies as well as in the use of technological tools and in the field of knowledge creation.

Accordingly, the National Institute of Education is in the process of taking appropriate and timely steps with regard to the education reforms of 2015.

It is with immense pleasure that this Teachers' Guide where the new curriculum has been planned based on a thorough study of the changes that have taken place in the global context adopted in terms of local needs based on a student-centered learning-teaching approach, is presented to you teachers who serve as the pilots of the schools system.

An instructional manual of this nature is provided to you with the confidence that, you will be able to make a greater contribution using this.

There is no doubt whatsoever that this Teachers' Guide will provide substantial support in the classroom teaching-learning process at the same time. Furthermore the teacher will have a better control of the classroom with a constructive approach in selecting modern resource materials and following the guide lines given in this book.

I trust that through the careful study of this Teachers' Guide provided to you, you will act with commitment in the generation of a greatly creative set of students capable of helping Sri Lanka move socially as well as economically forward.

This Teachers' Guide is the outcome of the expertise and unflagging commitment of a team of subject teachers and academics in the field Education.

While expressing my sincere appreciation for this task performed for the development of the education system, my heartfelt thanks go to all of you who contributed your knowledge and skills in making this document such a landmark in the field.

M.F.S.P. Jayawardhana

Deputy Director General

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Instructions of Referring to the Teachers Instructional Manual (Teachers Guide)

The Economics syllabus for General Certificate of Education (Advanced Level) is implemented from 2017 onwards after being revised under the national curriculum revising policy which is implemented once in every eight years. The Economics which was introduced as an Advanced Level subject in 1997 was undergone to the first revision on competency based in 2009 has been orderly listed out under 12 competencies for both grade 12 and grade 13 in this manual. A practical teaching-learning process that can be implemented in the classroom for 42 competency levels from the first competency in grade 12 syllabus has been proposed in this manual.

This teacher instruction manual has been complied all the competency levels prescribed for grade 12 in Economics syllabus of General Certificate of Education (Advanced Level).

The relevant competency, competency levels, the number of periods allocated for the competency level, the learning outcomes expected to have been achieved at the end of learning the subject matters under the competency level, are contained first and then proposed instructions for lesson planning, followed by a guideline to explain the subject matters are also contained in this manual in great details. Proposed activities for assessment and evaluation are also associated with many competency levels at the end.

The classroom teacher-learning process is expected to be planned in a manner of Economics will be developed parallel to the growth of attitudes, skills and practices of the students. An adequate guidance is expected to be gained for that purpose through this Teacher Instruction Manual.

Every teacher should lead the students for practical learning through planning the lessons for classroom teacher – learning process with reference to the proposed benchmarks under instructions for lesson planning and the detailed facts contained in the guidelines to explain the subject matters.

Since Economics is a practically important subject, the lesson plans are expected to be prepared by the teachers expanding the boundaries of the scope of their comprehension, reviewing the updated subject matters simultaneous to the prospective changes that may possibly take place in the business field.

Learning Outcomes and Model Activities

Competency 01 : Comparatively analyses basic economic problems and the alternative ways of solving the basic economic problems in an economic system.

Competency level 1.1 : Investigates the subject field of Economics.

Number of periods : 06

Expected Learning Outcomes :

- Describes economic behaviour of people
- Confirms economics as a social science.
- Explains the importance of learning Economics.
- Explains the difference between microeconomics and macroeconomics with examples.
- Explains the difference between positive and normative statements with examples.

Instructions for Lesson Planning:

- Inquires from students about the subjects they followed for G.C.E O/L and the difference of science and civics from other subjects.
- Conduct a discussion highlighting the facts mentioned below;
 - The subject of science studied phenomenon of natural environment and the study carried out through the conclusions derived by the tests done at laboratories.
 - The subject of civics study about the things needed to live as a good citizen the study carried and out through the conclusions derived by the study done at observing behavior of people at a society from various aspects.
 - In this way studying behavior of people of a society from various aspects is done by social sciences.
 - Diverse human behavior or facets of human society is studied under social sciences.
 - Economic facets of the human behavior is studied under economics.

- Since economic behavior of people within the society is studied under Economics it is called a social science.
- Group students appropriately and involve them in the following activity

Proposed Instructions for Learning:

- Pay attention to the place received by your group from the two places given below.
 - A religious place
 - A bakery
- Name the parties present at your place.
- Explain the activities performed by them.
- Explain their main objective and the need.
- Compare the differences between parties at your place and the parties at the other place.
- Prepare to present your findings to the whole class creatively and collectively.

A Guidelines to Explain the Subject Matters:

- People of a society have various needs and these needs can be classified as a physical and as mental needs.
- The needs that can be directly fulfilled by the consumption of goods and services are called physical needs.

Example: Foods, shelter, cloth

- There are mental needs that cannot be directly fulfilled by the consumption of goods and services

Example : spiritual development love, kindness

- The activities and behaviours performed by people to fulfill physical needs and wants of a society using limited resources are called economic behaviour.

Example: Goods and services production, distribution and consumption

- People of a society have various behaviours economic studies economics behavior of people.
- Since the economic theories and principles emphasized in economics are based on scientific method it is considered as a science.
- Main factors which differ economics from other natural sciences are given below.
 - Economic behaviors of people are examined by economics.
 - Economic theories developed cannot be proved at laboratories
 - Theories of social sciences like economics cannot be formed similar to rigid theories formed in natural sciences as economic behaviors are sensitive to factors such as time, region and social environment.
- Economic facet studied under economics means the human behaviors relating to production, exchange and consumption.
- Economics studies how people behave in solving the struggle between peoples' unlimited desire to own goods and services and limitedness of resources to produce goods and services.
- Economic facet deals with a broader subject area in human society and most of burning issues faced by the man will be an economic nature..
- Due to this reason Economics is considered as the queen of social sciences.
- Every economic activity considered in economics is related to goods and services production, distribution and consumption.
- The subject field of economics studies how society acts towards to fulfill their wants by consuming goods and services and how they make decisions in order to live a better life.
- Considering various definitions presented one common definition of economics can be formed as follows,
“ The subject which studies the relationship between scarce resources with alternative uses and human wants is called Economics”
- This idea can also be presented briefly as follows,
“Economics is the science which studies how unlimited human wants are fulfilled through limited resources”
- Some examples for the importance of learning economics can be given as below.

- Important in ruling a country.
 - Important as a successful citizen.
 - Ability to understand economic phenomenon well
 - Important in efficient decision making as investors, consumers and as producers.
 - Important to vote for a party
 - Important to make logical decisions for students
 - Important in selecting a better job
- Studying behavior of small units of an economy such as each sector Institutions, persons that consist each sector of an economy and economic variables separately is called microeconomics
- Following this analysis the economic behavior of units which make decisions of an economy such as consumers, labourers, production firms and government is done by micro economics.
- Some examples for the units that studied under microeconomics are given below
 - Studying demand supply and prize determination of a good
 - Production function of a firm
 - Production cost of a firm
 - Market operation of each good
 - consumer behavior at the market
 - market operation of a production firm
 - Scarcity
 - marginal cost
 - choice made from alternatives
- Aggregate functioning of an economy is studied macroeconomics.
 - Aggregate functioning of an economy takes place by the sum of the small units of each sector, institutions and persons of an economy

- Therefore functioning of aggregate economic activity, the factors affecting those activities and the problems arising are studied in macroeconomics.
- Some examples for the units studied in macroeconomics are given below.
 - Aggregate output level
 - Aggregate income level
 - Economic fluctuations and depressions
 - Inflation
 - Employment level
 - Unemployment level
 - Investment
 - Economic Growth
 - Economic recession
 - Balance of payments
 - Exchange rate
 - Money supply
 - Exports / Imports
- Economics consists of both positive and normative statements.
- Statements which answer the questions of what, what happened, what will happen and the statements that can be verified are called positive statements.
- which means the statements that state the existing nature of a particular thing, nature existed and from that the statements that state what will definitely happen in future
- Correctness of such a statement can be tested with the use of real world facts
- If the statement is verified through real world facts it is accepted or if not it is rejected.
- It can be seen a scientific and a theoretical nature in most of positive statements.
- Most economic theories also explain positive statements.
- Positive statements are mostly objective.
- Some examples for positive statements are given below

- Positive relationship exists between money supply and the price level.
- Negative relationship exists between price and the quantity demand.
- Sri Lanka's unemployment level in 2013 was 44%
- Population growth rate in Sri Lanka is 1%
- Positive statements are used to explain economic behaviors and economic phenomenon
- Normative statements are the statements presented in relation to what should exist and what should happen in a society.
- As normative statements are based on personal views, beliefs and traditions they are mostly subjective.
- It is difficult to test correctness of normative statements objectively using real world data.
- Some examples for normative statements are given below
 - It should increase monthly salary of every government worker by Rs.5000
 - Sri Lanka should obtain foreign aids for development
 - Every citizen should be given free medical facilities
 - Every person should earn equal income
 - Economic growth rate of Sri Lanka should be maintained at 8%
- Normative statements are important in economic policy analysis.

Competency level 1.2 : Presents the way of fulfilling human needs and wants through the consumption of goods and services.

Number of periods : 06

Expected Learning Outcomes :

- Explains the difference between human needs and wants with examples.
- Explains the difference between economic goods and non-economic goods with examples.
- Shows the way of converting non-economic goods to economic goods.
- Classifies resources as economic resources and as non-economic resources.
- Classifies natural resources as renewable resources and as non-renewable resources with examples.

Instructions for lesson planning :

- Inquires from students the things needed for people to live.
- Provide an opportunity for students to identify what needs are with the answers given by them.
- Instruct students to list out the various ways of fulfilling needs.
- With the use of above explain the difference between needs and wants with examples.
- Group students properly and engage them in the following activity.

Proposed Instructions for Learning:

- Two categories of goods used to fulfill human needs are mentioned below. Pay attention to the category received by your group.
 - Sun light, air, rain water, wind
 - Books, chocolates, buns, shoes
- Show what needs are being fulfilled using those goods?
- Prepare a list of some other goods and services used to fulfill the same need.
- Show how another category of goods received by the other groups differs from the category of goods received by your group.
- Show what resources are found to produce these goods?
- Prepare to present your findings to the whole class.

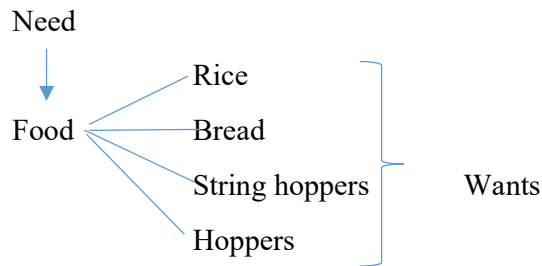
A Guidelines to Explain the Subject Matters:

- Basic necessities needed to sustain human life are called needs

Examples: - Food
Clothes
Housing

- The various forms of fulfilling needs are called wants

Examples :-



- While needs are combined with biological sources, wants are combined with traditions, values and culture.
- Needs are limited and wants are unlimited.
- Although needs do not change with time, wants change with it.
- Needs are common to all, wants differ from person to person.

- Wants can be classified as material wants and as non-material wants (physical wants, mental wants). Economics pays attention only to the material wants that can be fulfilled through the consumption of goods and services.
- Human wants are fulfilled with goods.
- Anything which provides positive satisfaction or utility is called goods in economics.
- Goods that fulfill human needs and wants
 - Non-economic goods (Free goods/cost free goods/natural goods)
 - Economic goods
- Goods with unlimited supply at zero price are called non-economic goods.
Examples :- Air, water and sun light gifted from nature.
- There is no resource cost and opportunity cost with non-economic goods.
- Goods with scarce supply are called economic goods.
Example :- Pens, books, rice, wheat flour
- There is a resource cost and opportunity cost involved with economic goods.
- Economic goods are produced with the intervention of man and with the combination of resources.
- As economic goods are produced with scarce resources it involves a price and also there is a problem of choice.
- Although there is no room to convert economic goods to non-economic goods there are situations where non-economic goods can become economic goods.
Example:- Oxygen used by a diver when diving
 - Oxygen given to patients
 - Solar panels produced with solar power
 - Bottled water
- Oxygen, solar power, water used in the above situations are converted into economic goods and this has happened because it involves resource cost and an opportunity cost.
 - All inputs used to produce goods and services to fulfill human wants are called resources.
 - There are two forms of resources
 1. Economic resources
 2. Non economic resources

- Resources with a limited supply against unlimited wants of a society or resources which are scarce in nature are called economic resources.
- As scarcity is considered the main characteristic of economic resources when consuming opportunity costs arise with these resources.
Example:- A used land, fuel
- The non scarce resources gifted by nature and which do not involve an opportunity cost are called non economic resources.
- Resources gifted from nature used in the production process are called natural resources.
Example :- sun light, air, rain water
- There are two forms of natural resources.
 1. Renewable resources
 2. Non-renewable resources
- The resources which do not used up with consumption are called renewable resources. These resources are generated again.
Example:- forestry, fisheries
- The resources which are used up with consumption and the resources which do not generated again are called nonrenewable resources.
Example:- Diamonds, gas, gold, coal
- As nonrenewable resources depreciate fast these resources may should not be preserved for the future. In addition, sustainable development can be delayed with this. Therefore it is important to protect natural resources.
- Due to over consumption of natural resources, it should face for number of problems globally.
Examples: Increase of global warming
 Liquidation of glaziers
 Damage to the ozone layer
 Shortage of water
 Natural disasters such as floods and land slides
- To prevent the unfavorable effects of such problems it is essential to protect natural resources.

Competency level 1.3: - Analyses determinants of factor productivity with the identification of the characteristics of factors of production.

Number of periods: 06

Expected Learning Outcomes :

- Classifies factors of production used to produce goods and services.
- Shows the characteristics of factors of production separately.
- Defines factor productivity.
- Describes the determinants of factor productivity.

Song: - We have some resources
 But with many uses
 Duty is to preserve these
 Land, capital, labour, entrepreneur
 This is the way to classify them

- Presents the song to the class by a student.
- Inquiries from the students about the things mentioned.
- Develops a discussion raising the following facts.
 - Production resources are used to produce goods and services.
 - As the resources are scarce, they should be used economically.
 - The resources can be classified as land, labour, capital and entrepreneur.
- Group students properly and engage them in the following activity.

Proposed Instructions for Learning:

- From the following production situations pay attention to the situation received by your group.
 - Making of pots
 - Making of cane chairs
 - Making of porridge
- Prepare a list of natural resources, human resources and the resources made by man which used in the production situation received by your group.
- Show the parties of decision making and risk bearing of the relevant production process.
- State the characteristics of natural resources, human resources and the resources made by man used in the production separately.
- Show the importance of making decisions and risk bearing of the production process.
- Propose the ways to minimize the cost of production of resources and to maximize output.
- Present your findings to the whole class creatively and collectively.

A Guidelines to Explain the Subject Matters:

- The resources of land, labour, capital and entrepreneur used in production are called production resources.
- Land and capital can be classified as property resources and labour and entrepreneurship can be classified as human resources.
- Natural resources gifted from nature which can be used productivity in production are called land. All resources such as forests, minerals, ocean, rivers, wild animals and air located above or below the earth are included under land.
- The Following are the characteristics of land.
 1. Being a gift of nature
 2. Supply being inelastic

3. Immobility
 4. Possibility to improve productivity
 5. Non uniformity (Location, climate, minerals, aquatic resources)
 6. Payment for land being rent.
- Mental and physical efforts used to produce goods and services are called labour.
 - Characteristics of labour are as follows.
 1. Being a live factor
 2. Mobility
 3. Heterogeneity
 4. Possibility to improve productivity through education and training
 5. Possibility of decision making and organization
 6. Payment for labour being wages
 - Factor affecting the size of the labour force.
 1. Size of population and age structure
 2. Health of population
 3. Level of education and skills of the population
 - Man made aids used in the process of the production of goods and services are called capital.
 - Special characteristics of capital are,
 1. Being a man made factor
 2. Being a real factor
 3. Being a stock factor
 4. Consists of productivity
 5. Possibility to use in production again and again
 6. Possibility to depreciate
 7. Benefit of capital being interest
 - Variability of capital and its use is determined by the technology of each country
 - Various forms of capital are as follows.
 1. Fixed capital/real capital/physical capital
 2. Circulating capital

3. Economic overhead capital
 4. Social overhead capital
 5. Human capital
 6. Natural capital
 7. Social capital
- Durable capital used in the production process continuously such as factories, machinery and stores are called fixed capital.
 - Throughout the period where fixed capital is used the resource owner will receive a flow of benefits.
 - Stock of raw materials used in the production process, stock of semi-finished goods stock of goods being produced, stocks ready for sale and finished goods are identified as circulating capital.
 - This type of capital important in continuing production process without any barrier and for preparing future production plans.
 - Capital goods which facilitate production of goods and services and the distribution process of an economy are called economic overhead capital. Also called as economic infrastructure.

Examples: Ports, air ports, high ways

- Economic infrastructure affects encourage domestic and foreign private investments. Due to this, today. The governments of most countries provide this type of capital.
- Capital goods which help produce services to fulfill basic human needs are called social overhead capital. Buildings in the education sector, hospitals in the health sector, operation theatres, medical research centers and equipment and also drainage lines come under social overhead capital. These improve social welfare.
- Skills of labour consists of education, training, research, experiences and favourable health which help to improve the productivity of labourers and professionals are called human capital.
- Through human capital, productivity of labour can be improved and both quality and quantity of production can be increased.
- University lecturers, trained teachers and consultants are the examples for improved labour of human capital

- Natural resources such as land, streams, air, water and eco systems which facilitate production are called natural capital. Commonness of natural capital would be an important factor for economic growth.
- Institutions which improve social interrelations quantitatively and qualitatively, traditions, membership of clubs and social networks are called social capital. Today social capital is a major concern of research and development institutions.
- In economics money does not consider as capital.
- Capital stock of a country is generated through investment. Investments arise with savings. Therefore, there is a relationship among capital, investment and savings.
- Savings of an economy exist in various forms. It can be classified as domestic savings, foreign savings, business firms' savings and public savings.
- The proportion of house hold income not used for daily consumption is considered as savings.
- Part of firms' profits is kept in firms as retained profits. It is called business savings and it will be used for future investment.
- The balance obtained by deducting current expenditure from total government revenue is identified as public savings.
- Combining all factors of production within an economy, organizing of production activities, operation and policy making while bearing risks is called entrepreneurship.
- Functions performed by an entrepreneur are as follows.
 1. Mobilizing factors of production engaged in policy decision making.
 2. Organization of production activities
 3. Introduction of innovations
 4. Risk bearing
- Characteristics of an entrepreneur are,
 1. Being a human factor
 2. Being a generating force
 3. Successfully facing challenges

4. Leadership quality
5. Future vision
6. Belief in self
7. Room for training
8. Creativity
9. Identifying of opportunities
10. Positive thinking
11. Flexibility

- There are differences between a manager and an entrepreneur. A manager is the person who implements decisions made by an entrepreneur. Although the benefit gained by an entrepreneur is considered as profit earnings of a manager is considered as wages. An entrepreneur faces uninsured risks while a manager does not face such risks.
- Countries like Australia and New Zealand have lot of land resources. Therefore mainly they use land in their production.
- Countries like China and India use mainly labour in their production as these countries have world's largest population.
- Countries like the United States of America and Japan use capital mainly in their production as these countries are rich with capital.
- Although there is less of land, labour and capital Singapore has achieved a high level of development with having the factor of entrepreneurship.
- Average output obtained by a unit of an input is called productivity.
- Factor productivity is estimated as

$$\text{Factor productivity} = \frac{\text{Total output}}{\text{Total input}}$$

- Determinants of factor productivity are
 - Technology
 - Human capital
 - Management
 - Division of labour and specialization

Competency level 1.4 : Analyses the central problem of economics, logically.

Number of periods :06

Expected Learning Outcomes:

- Defines the concept of scarcity.
- Provides reasons for scarcity.
- List alternative uses of resources and explains the way of making choices with examples.
- Defines the concept of opportunity cost.
- Analyzes the concept of opportunity cost with examples.
- Analyses the situations of zero opportunity cost with examples.

Instructions for lesson planning :

Select two students to present the dialogue given below.

Son : “Mother my pair of shoes is badly damaged, please buy me a pair of shoes.

Mother : “Let me see, this can be used for a few more days by getting mended. The money I have is not enough to last till next week. There is one more week for your father to get his salary.

Son : My school bag also unfastens, so it is difficult to carry books in it. At the same time my Mathematics book is also over now.

Mother : The Book is essential; therefore we will buy a book and we will try to buy a bag the next month.

- Inquire from the students; the facts emerging from the dialogue.
- Conduct a discussion by highlighting the facts mentioned below.
- Resources are limited and wants are unlimited. When trying to fulfill unlimited wants using limited resources the problem of scarcity arises.
- Inadequacy of resources at a particular time to fulfill wants of people of a society is called scarcity in economics.

- Make the students engage in the activity by appropriately grouping and providing proposed learning instructions.

Proposed Instructions for Learning:

- Focus your attention to the resource you have received from the resources given below:
 - Money deposited at a bank
 - Piece of land of an acre
 - A building closer to the main city
- Identify the main characteristics of the resource you have received. Lists out its alternative uses
- Arrange them in order while considering their alternative uses
- Out of the above, present the best alternative opportunity that your group has selected
- Due to that selection, point out the next best alternative opportunity what you have given up.

A Guidelines to Explain the Subject Matters:

- Scarcity is the central economic problem common to every economy.
- It is a relative concept(which means compared to human wants resources are relatively limited).
- This does not mean the total absence of resources (Relative search).
- The problem of scarcity arises with the existence of two main characteristics of a society they are as follows
 1. At a given period of time human wants being unlimited.

2. At a given period of time resources used to produce goods and services to fulfil human wants being limited.

- The shortage of goods prevailing at the market is not considered as scarcity as the shortage arises with the delay of stocks and this shortage disappears with the arrival of stocks.
- The goods produced with scarce resources are called economic goods and the supply of these goods are limited.
- Use of resources economically is considered as efficient utilization of resources. However until wants remain unlimited, this economic use of resources would not solve the problem of scarcity.
- Scarcity is considered as the central problem of economics due to the following reasons,
 1. It is common to every society.
 2. As any society would commonly face the problems of what to produce in what quantity, how to produce and whom to produce.
- Since scarce resources have alternative uses, instead of selecting many, people have to choose one alternative.

For Example- when considering land it has alternative uses such as constructing of factories, farming and making of play grounds, therefore a decision has to be made in selecting one alternative.

- In this regard it has to be subjectively ordered which wants should be fulfilled first and which wants are expected to be fulfilled later.
- Choices are made by households, business firms and the government in various ways .
- The problem of choice arises in an economic system due to
 1. Scarcity of resources
 2. Based on alternative uses of resources
- In this way when selecting one alternative from all other alternatives available, the value of the next best alternative forgone is called opportunity cost.
- Opportunity cost is also named as real cost and as economic cost.

For example the alternatives for land available to a person in the above example can be stated as follows according to its priority.

1. Constructing of a factory

2. Farming

3. Building of a play ground

- When selecting the alternative of constructing of a factory the next best alternative forgone would be the alternative of farming and therefore the opportunity cost of constructing a factory is the harvest that can be obtained by farming.
- Opportunity cost is considered as a positive concept and opportunity cost is positive only with economic goods.
- Important factors relating to the opportunity cost of a choice are as follows,
 1. The concept of opportunity cost is not a financial concept. It is a real concept, which means the opportunity cost concept shows the real value of the next best alternative forgone when selecting an alternative. It is not the financial value.
 2. Opportunity cost concept is connected to the individual. Therefore opportunity cost can be expressed only by the person who made the choice. It differs from person to person.
 3. There is an external cost which occurs with opportunity cost.
- There are a few situations where opportunity cost can be zero.
 1. When there are unlimited resources(Existence of non-economic goods)
 2. Absence of alternative uses.
 3. When there are unemployed resources.

Competency level 1.5 : Inquires the Basic Economic Problems.

Number of periods : 04

Expected Learning Outcomes:

- Names the Basic Economic Problems.
- Analyses the Basic Economic Problem such as what to produce in what quantity.
- Analyses the Basic Economic Problem of how to produce.
- Analyses the Basic Economic Problem of whom to produce.

Instructions for lesson planning :

- Inquire from students whether the problem of food and housing are common problems faced by every person in the world or not.
- Conduct a discussion highlighting the facts mentioned below.
 - Although food problem and housing problem are the problems faced by some countries of the world they are not common problems faced by every person in the world.
 - While scarcity being common to any society, each society commonly faces the problems of allocation of resources among alternative uses as alternative uses involve with resources.
- Make the students engage in the activity by appropriately grouping and providing proposed instructions for learning.

Proposed Instructions for Learning :

- Students in your class received an opportunity to produce and sell a particular food item for their Economics day
- Group students into two groups as
 1. Group A
 2. Group B

- The Economics society decided to give Rs. 10000 for each group.
- One group should produce one food item.
- Pay attention to the group you belong and by discussing with the other groups try to solve the following problems.
- Prepare a list of food items that can be produced with money given to you.
- Decide the food item to be produced by a group discussion.
- How much of that food item will you decide to produce?
- What factors should be considered when deciding the type of food and its quantity?
- When producing that food item what type of production technique will be used by your group?
- What reasons affected that production technique?
- To whom is in this product produced?
- Prepare to present your findings to the whole class in a creative manner

A Guidelines to Explain the Subject Matters:

- Due to the scarcity of resources and with its alternative uses any society should make three choices
- These three choices are common to any society
- These three choices are identified as basic economic problems in economics.
- In this regard basic economic problems means,
 1. What to produce in what quantity?
 2. How to produce?
 3. For whom to produce?
- Due to the scarcity of resources and alternative uses any society would face the basic economic problem of what to produce in what quantity?

Examples:- Using scarce resources, it has to be decided which goods to be produced?

Whether to construct hospitals or schools

Whether to construct factories or playgrounds

Whether to produce consumer goods or capital goods

- Similarly it should decide the quantity of the selected goods to be produced

Examples:- How many hospitals?

How many factories?

How much of capital goods?

- In this way the resources should be allocated after deciding what goods to be produced and in what quantity
- Also when producing the decided goods in the decided quantity it should be decided how much of resources should be used for the present and how much left for the future. (which means it has to be decided from available resources how much is used at the present and how much is kept for the future)
- As the resources are distributed after deciding what to be produced in what quantity, this basic economic problem is also identified as a resource allocation problem.

- Due to the scarcity of resources and alternative uses any society would face the problem of how to produce as well.
- The basic economic problem of “How to produce?” means which production technique should be used in producing goods and services?
- Also it is the idea which resources are to be used in which proportion
- Two production techniques can be used to produce goods and services as labour intensive production technique and capital intensive production technique .
- Labour intensive production techniques use more of labour and relatively less capital and capital intensive production techniques use more of capital and less of labour.
- As the production has to be carried out with the use of any production technique, the basic economic problem of how to produce is also identified as a problem of production.
- The problem of whom to produce means among whom the total product of the economy is to be distributed.
- Which means who own the limited amount of goods and services produced with the use of scarce resources.
- The use of goods depends upon a person’s income.
- Factor owners earn income in the form of wages, rent, interest and profits.
- The income gained by each person differs on factor ownership and at factor price.
- The person who own more factor income will have the chance of consuming more goods produced and the person who owns less factor income will have the less chance of consuming the goods produced.
- In this way the consumption of goods depends upon a person’s income the problem of the whom to produce is also identified as a problem of distribution.

Competency level 1.6 : Analyses the ways of organizing to solve basic economic problems.

Number of periods: 04

Expected Learning Outcomes :

- Defines economic systems.
- Explains the elements of an economic systems.
- Names main actors of an economic systems.
- Inquires the duty of decision making parties of an economic systems.

A Guidelines to Explain the Subject Matters:

- Mechanism or the institutional framework made by people who live within a society to solve basic economic problems is called an economic system or an economic organization.
- Institutions of an economic system operate according to the rules and regulations made by man.
- As these institutions consist of men they are live and active.
- Similar to the natural elements of a physical system, economic institutions are the elements of an economic system.
- These economic institutions are also called as institutional characteristics.
- Various forms of institutional patterns can be seen in an economy depending upon social, cultural and ancient patterns prevailing at each country.
- Although there are some differences the main elements of an economic system are as follows.
 - Households
 - Government
 - Business firms
 - Labour organizations
 - Non governmental organizations
 - Markets
 - Incentives

- Legal structure
 - Values, traditions and culture
-
- From these main elements special parties who make decisions in an economic systems are the households, government, business firms, labour organizations and the non-governmental organizations.
 - The most important institutional characteristic of an economic system is the household.
 - A group of people who lives under the same shelter and who share a common budget is called a household.
 - Households of various societies can be in the forms of nuclear families or extended families.
 - On the one hand households are the suppliers of labour and on the other hand they are the consumers of most of goods and services produced.
 - Also households are the owners of factors of production.
 - Households perform some important duties within an economic system.
 - These duties are also considered as the economic decisions of households.
 - These duties include,
 1. Making decisions related to the supply of factors
 2. Making decisions related to the purchase of goods and services.
 3. Making decisions related to how much is consumed and how much is saved.
 - Each and every country has form of a government and these governments have large authority.
 - Duties of a government are as follows.
 - Protection of economic and personal rights
 - Regulation of industries and businesses
 - Provision of goods and services
 - Redistribution of income
 - Making of rules, regulations and constitutions
 - There are various forms of business firms existing within an economy
Example:- private, cooperative, state

- Duties of business firms are as follows
 - Purchasing of factors of production
 - Deciding what to produce, in what quantity, how to produce and whom to produce
 - Producing of goods and services
 - Selling of goods and services at a reasonable price

- Some duties of labour organizations made by labourers are as follows
 1. Act in order to protect employee rights
 2. Influence over employment, production technology and wage level

- Non-governmental organizations that have emerged in modern economies have some important duties. These duties show a similarity to the duties of a government.

- Example :- Elimination of poverty
 - Protection of environment
 - Providing welfare for the affected people at natural disasters.

Competency level 1.7 : Classifies economic systems using various criteria.

Number of periods: 06

Expected Learning Outcomes :

- Describes the criteria for the classification of economic systems.
- Defines the market economic system.
- Explains the characteristics and operation of the market economic system.
- Analyses the ways of solving basic economic problems by a market economic system.
- Defines the command economic system.
- Explains the characteristics and operation of the command economic system.
- Analyses the ways of solving basic economic problems by a command economic system.
- Defines the mixed economic system.
- Explains the characteristic and operation of the mixed economic system.
- Analyses the way of solving basic economic problems by a mixed economic system.
- Inquires the recent trends of economic systems.
- Lists the criteria used to assess the duty of economic system.

A Guidelines to Explain the Subject Matters:

- An economic system operates following an institutional structure which consists of laws, traditions and values.
- Based on different forms of these institutional structures differences can be seen among economic systems.
- Following this some criteria are being used to classify economic systems.
 - Decision co - ordination mechanism
 - Ownership of property
 - Nature of incentives

- Based on decision co-ordination mechanism economic system can be classified as follows.
 - Market economic system
 - Command economic system
- Based on ownership of resources and property rights economic systems can be classified as follows.
 - Capitalist economic system
 - Socialist economic system
- Differences can be observed between capitalist economic system and socialist economic system based on the criteria of resource ownership and property rights.
- Private sector property at a capitalist economy while government owns property at a socialist economy.
- Incentives that can be seen in different economic systems are three types.
 - Material incentives
 - Moral incentives
 - Coercive incentives
- Material incentives are dominant within a market economy. Profit earning act as an incentive.
- Coercive incentives can be seen within a command economy.
- Incentives also operate in the form of morals. At the situation of natural disaster or collapse of government people make right decisions and act accordingly.
- Considering all above mentioned criteria which use to classify economic systems, they are classified as follows.
 - Market economic system
 - Planned economic system
 - Mixed economic system

- Market economic system is the economic system which solve basic economic problems based on the price determined by market demand and supply.
- Market economic system also named as capitalist economic system or as laissez faire.
- Basic characteristics of a market economic system are as follows.
 - Private ownership of property
 - Freedom of choice or free entrepreneur
 - Competitive market situation
 - Incentives based on self interest
 - Operation of price mechanism
 - Consumer sovereignty
 - Limited role for the government
- Price mechanism act as the co– ordination mechanism of solving basic economic problems of a market economy.
- Price performs three important functions within a market economy
- Signaling Function
- Incentive Function
- Rationing Function
- Self-interest is the determinant factor of the behavior of economic agents of a market economic system. Social welfare is neglected within a market economy.
- Basis of market economic system is the private ownership of property. Free entrepreneur combines with private ownership of property is also considered as a main characteristic of a market economic system.
- The economic system which solve basic economic problems by the commands provided by a central planned authority is known as command economic system.

- Characteristics of a central planned economic system are as follows
 - Public ownership of property except labour.
 - Use of planned mechanism to solve basic economic problems.
 - Act based on social welfare.
 - Act to achieve public well being.
- Decisions related to what to produce, how to produce and whom to produce are taken by the central planned authority
- Weaknesses of command economic system are as follows.
 - Problem related to coordination and organization.
 - Collapse of quality control
 - Insufficiency of incentives
 - Environmental degradation
- The economic system where resources are distributed using both price mechanism and planned mechanism is known as a mixed economic system.
- Characteristics of a mixed economic system are as follows.
 - Consumer, producer, owners of factors of production and government are the active agents of the economy.
 - Self interest is the motivational factor of the private sector and social welfare is the motivational factor of the public sector.
 - Both private and public sector own resources.
 - Decisions related to resources allocation is done through planned mechanism and competition operates through private sector.
 - Some examples for mixed economic systems are given below.
 1. Social market economy
 2. Socialist market economy

- Market economic system where government intervenes to promote social justice is known as a social market economy. This economic system highly emphasize on social justice.
- Social market economy is a controversy for liberal market economy. where liberal market economy emphasize operation of economy through market forces without any government intervention.
- According to liberalists intervention of government affects to limit person's freedom and loss of efficiency of market mechanism.
- People who reject ideas of liberalists and support social market economy believe that to promote social justice intervention of government is as necessary.
- Although resources of a social market economy owned by the private sector, government highly influence over the usage of these resources. Government intervenes to protect human rights in the fields of economic, political, civil, social and cultural and implement broad social networks.
- In the situations of basic human rights of citizens endanger or violated within a social market economy government provides a protection for them.
- In the situations where a person face disaster or an accident while engage in employment or social situation of ageing, poverty and unemployment social market economies provide social protection network.
- Government collect most of funds to provide such social protection networks through impose of taxes. Citizens of a social market economy willingly pay taxes as they know they will receive social benefits from the government.
- Norway, Germany, Sweden and Finland are the examples for social market economic system.
- Economic systems which operate basically through socialist ideology and to some extent which operates through market forces are known as social market economies.

- A socialist market economy is totally different from a social market economy. In this economic system government owns resources. However, decisions related to resource usage are taken by the private sector. Production firms have the right to determine price of goods and the quantity.
- China, Hungaria Bulgaria are some examples for socialist market economies.
- New traditional economic systems are a recent trend for economic systems.
- IN this a trend moving towards new cultural framework based on a religion or a traditional society can be seen.
- Criteria used to assess the duty of an economic system are as follows.
 - Full employment
 - Economic efficiency
 - Economic growth
 - Price stability
 - Fair distribution of income
 - External stability
 - Quality of environment
 - Economic freedom

Competency level 1.8 : Analyses the behaviour of opportunity cost using the Production Possibility Frontier.

Number of periods : 06

Expected Learning Outcomes:

- Defines the Production Possibility Frontier.
- Names the assumptions used to construct the Production Possibility Frontier.
- Creates Production Possibility Frontier under the constant and increasing opportunity cost situations.
- Analyses the behaviour of opportunity cost using the Production Possibility Frontier.
- Presents the factors influencing constant and increasing opportunity cost situations.
- Confirms that increasing opportunity cost situation is as more realistic.

Instructions for Lesson Planning:

- Ask students to think of a housing project which is proposed to be implemented on a 50,000 sq. feet land with construction of houses of 1000 sq. feet and 2000 sq feet.
- Inquire students only if 1000sq. feet houses are constructed on this land how many houses can be constructed?
- Similarly Inquire students only if 2000 sq. feet houses are constructed on this land how many houses can be constructed?
- Also inquire from students when constructing 2000sq. feet houses on this land how much of other type of houses should be forgone.
- Conduct a discussion highlighting the facts mentioned below.

- On a 50,000 sq. feet land, only 25 houses of 2000sq. feet and only 50 houses of 1000 sq. feet can be constructed.
- When increasing 2000 sq feet houses, two houses of 1000sq. feet houses should be forgone.

Proposed Instructions for Learning :

- Focus attention on the production institute received by your group from the production institutes given below

Institute of Ayesha Text

Ayesha Text Institute had a limited amount of resources such as: land labor and capital .In a given situation Ayesha text planned to produce shirts and trousers employing the above resources fully with maximum efficiency. If he employs all the available resources on shirts production he can produces only 50 shirts. When he shifts the resources employed for the shirts production to trousers production by reducing 10 units of shirts he can increase by 5 units of trousers. If all the resources are employed for the trousers production 25 trousers could be produced

Institute of Vijira Enterprise

Vajira produces either rice or clothes employing a certain amount of the available limited resources. He can produces only 45 units of clothes in a given situating by using the existing technology and employing the available resources fully to the maximum. When increasing rice production by one unit clothes production should be reduced by 2, 3, 10, 14, and 16, respectively. When the cloth production is zero maximum rice production is 05 units

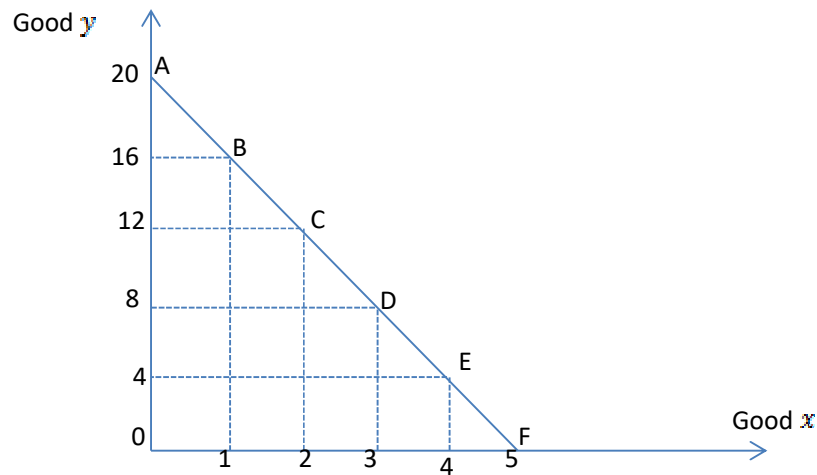
- Study the information of the production received by you.
- Prepare a table with the combination of the production of two goods through the above information.
- Indicate in the chart itself the amount of units forgone in one production when increasing one unit of the other product.
- Using the above table, create a graph indicating the alternative combinations of the two goods.
- Express your view on the shape of the graph.

- Explain the nature of the opportunity cost using the table and the graph .
- Be ready to present your findings creatively to the whole class.

A Guidelines to Explain the Subject Matters:

- At a given period of time by utilizing all the resources of an economy fully with maximum efficiency and with prevailing technology, the line drawn on combining the maximum combination of output of two goods is known as Production Possibility Frontier.
- The Production Possibility Frontier is also identified as Production Possibility Curve.
- Factors determine the Production Possibility Frontier of an economy can be shown as follows
 1. Resources endowment
 - Land
 - Labour
 - Capital
 - Entrepreneurship
 2. Factor productivity
 - Technology
 - Management
 - Human capital
 - Division of labour and specialization
- The following assumptions are used when drawing a production possibility curve.
 - Production of only two goods
 - Resource stock remains constant
 - Technology remains constant during the concerned period
 - Fully utilization of resources with maximum efficiency

- When moving along a production possibility curve the ratio between forgone amount of the other goods when increasing the fixed amount of goods is identified as the slope or the gradient.
- Slope shows the marginal opportunity cost.
- According to the behavior of the marginal opportunity cost of the production possibility curve few forms of opportunity cost exist.
 1. Constant opportunity cost
 2. Increasing opportunity cost
- When moving along a production possibility curve with increasing the fixed amount of a certain goods the situation of remaining the forgone amount of the other good unchanged is identified as constant opportunity cost. The shape of the production possibility curve with this type of opportunity cost is linear in its nature. It is shown by the graph below.



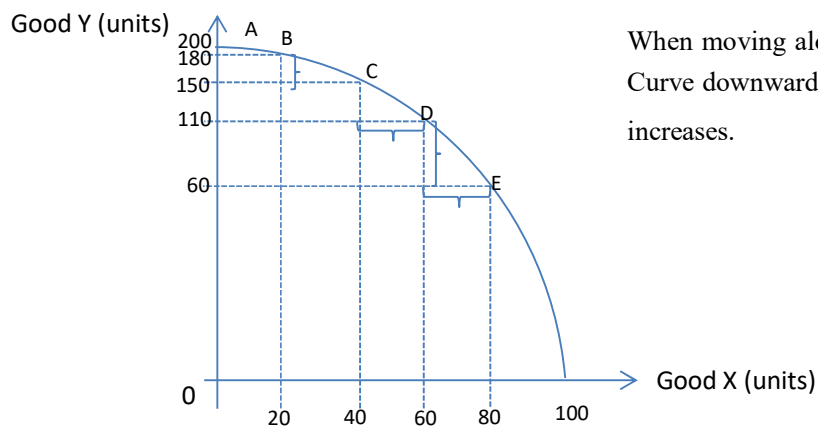
- Opportunity cost of a production possibility curve can be estimated using the equation below..

$$\text{Opportunity cost} = \frac{\text{Forgone amount of goods}}{\text{Increase amount of goods}}$$

- The behavior of opportunity cost on a linear production possibility curve is shown by the table below.

Combinations of goods	Opportunity cost of the production x goods	Opportunity cost of the production y goods
A – B	$\frac{-4}{1} = -4$	$\frac{-1}{4} = \frac{-1}{4}$
B- C	$\frac{-4}{1} = -4$	$\frac{-1}{4} = \frac{-1}{4}$
C – D	$\frac{-4}{1} = -4$	$\frac{-1}{4} = \frac{-1}{4}$
D – E	$\frac{-4}{1} = -4$	$\frac{-1}{4} = \frac{-1}{4}$
E - F	$\frac{-4}{1} = -4$	$\frac{-1}{4} = \frac{-1}{4}$

- When moving along the production possibility curve by increasing the fixed amount of a certain goods the situation of increasing the amount of forgone good is identified as increasing opportunity cost.
- The shape of the Production Possibility Curve with this type of opportunity cost is concave to the origin.
- It is shown by the graph below.



When moving along Production Possibility Curve downwards the ratio of $\frac{\Delta y}{\Delta x}$ gradually increases.

- The behavior of increasing opportunity cost of a Production Possibility Curve which is concave to the origin is shown below.

Combination of goods	Opportunity cost of the production x $\frac{-\Delta y}{+\Delta x}$	Opportunity cost of the production y $\frac{-\Delta x}{+\Delta y}$
A - B	$\frac{-20}{20} = -1.0$	$\frac{-20}{20} = -1.0$
B- C	$\frac{-30}{20} = -1.5$	$\frac{-20}{30} = -0.6$
C - D	$\frac{-40}{20} = -2.0$	$\frac{-20}{40} = -0.5$
D - E	$\frac{-50}{20} = -2.5$	$\frac{-20}{50} = -0.4$
E - F	$\frac{-60}{20} = -3.0$	$\frac{-20}{60} = -0.3$

- The factors affecting constant and increasing opportunity cost can be stated as follows

Reasons for constant opportunity cost	Reasons for increasing opportunity cost
<ul style="list-style-type: none"> Homogeneous Resources The resources efficient for one industry are the same for the other industry. 	<ul style="list-style-type: none"> Non-homogeneous Resources The resources efficient for one industry are not efficient for the other Industry.

- From the above mentioned opportunity cost situations, increasing opportunity cost is more realistic
- Because of this, increasing opportunity cost is used for various economic analysis.

Competency level 1.9 : Represents basic concepts of economics and change of production capacity using Production Possibility Frontier.

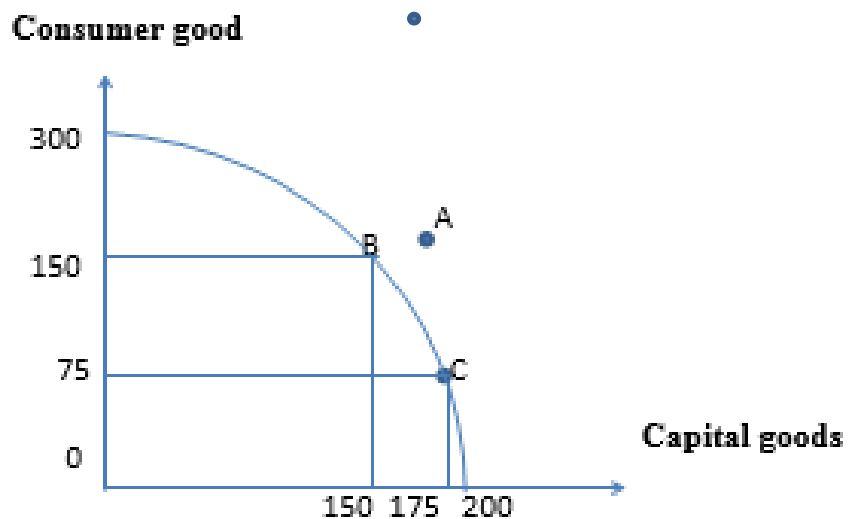
Number of periods : 08

Expected Learning Outcomes:

- Presents microeconomic concepts with Production Possibility Frontier.
- Presents macroeconomic concepts with production possibility Frontier.
- Shows change in production capacity with Production Possibility Frontier based on the factors affecting production capacity.

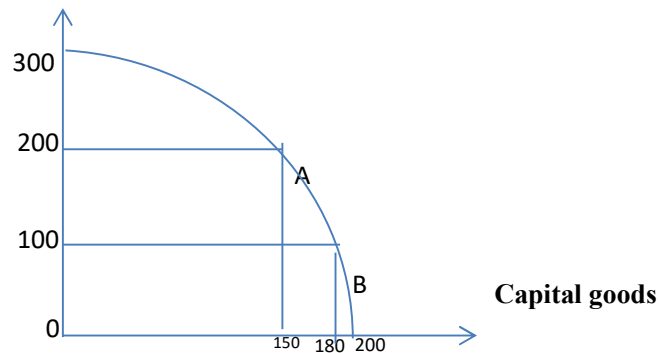
A Guidelines to Explain the Subject Matters:

- Micro and macro economic concepts can be presented with a Production Possibility Frontier.
- Examples for some of the micro economic concepts are given below
 - Scarcity
 - Alternative uses
 - Choice
 - Opportunity cost
 - Productive efficiency
 - Allocative efficiency
- Scarcity, alternative uses and choice can be presented by a Production Possibility Frontier as below.



- According to the above graph, point A represents scarcity as the resources of the economy are not enough to produce the combination of goods shown by the point A.
- There are lots of alternative product combinations exist on the Production Possibility Frontier. Points A, B and C show some of the combinations.
- An economy should select one combination from the available combinations. According to the above example economy should select one combination from the combinations of B and C.
- Opportunity cost is defined as the value of the next best alternative forgone when selecting among scarce resources of a particular economic activity.

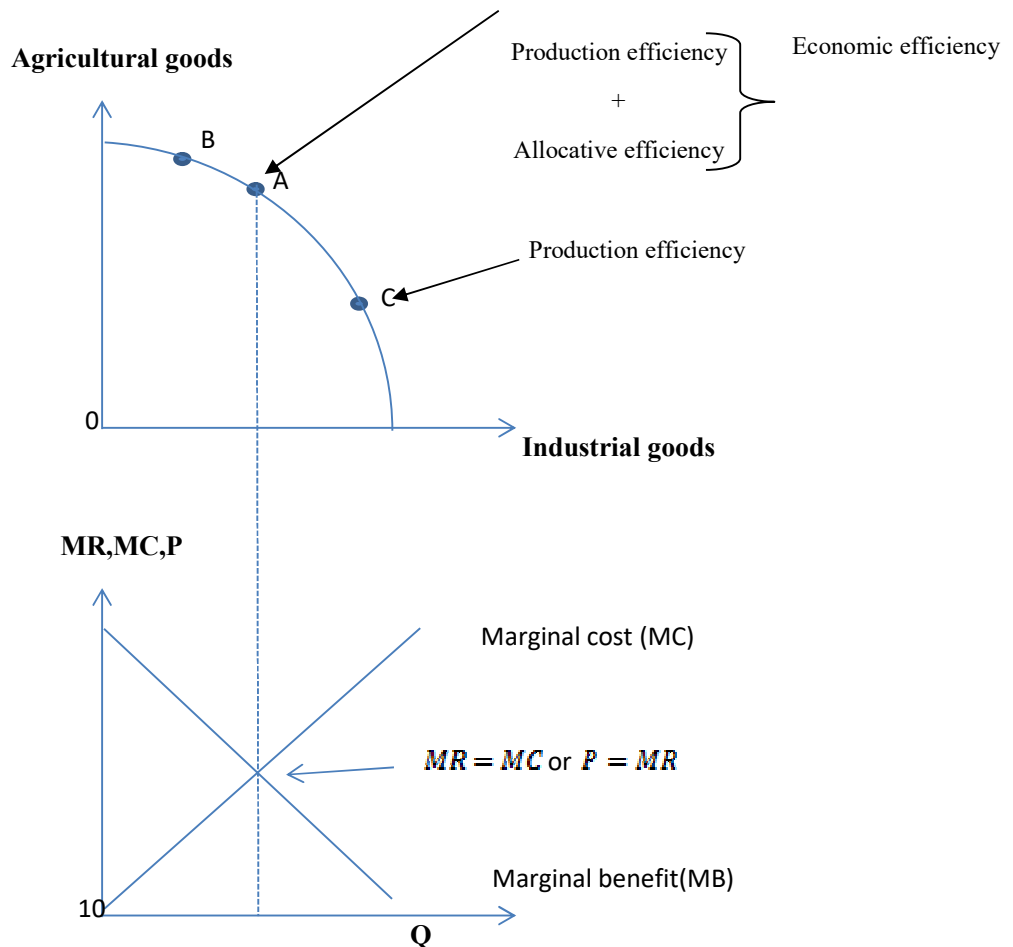
Consumer goods



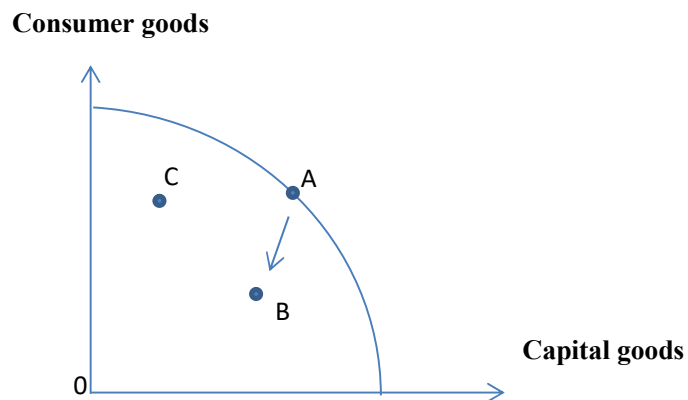
- According to the above example, if this economy select the combination of A the opportunity cost of 200 units of consumer goods is the 50 units of capital goods and opportunity cost of 150 units of capital goods is the 100 units of consumer goods.
- If this economy decided to move from A to B the opportunity cost of producing 30 units of capital goods would be the 100 units of consumer goods mean while if it decided to move from B to A the opportunity cost of producing 100 units of consumer goods would be the 30 units of capital goods.
- Production efficiency means achieving of maximum output from all resources of an economy. This can be shown by any point on the

Production Possibility Frontier. Two main conditions are necessary for the production efficiency. They are full employment and full production.

- Allocative efficiency means distribution of limited resources of an economy based on society's preference. Condition for this is Price = Marginal cost ($P=MC$) or Marginal Cost = Marginal Revenue ($MC=MR$). Allocative efficiency can be shown by only one point on the Production Possibility Frontier.
- The benefit gain by the consumption of an additional unit of a particular goods is known as marginal benefit. It would be the maximum price that the consumer is willing to pay for the good. Therefore marginal benefit will be equal to price. The amount added to the total cost When increasing the output of a particular good by one unit is called marginal cost (MC).
- The sum of allocative efficiency and productive efficiency is known as economic efficiency.
- It can be shown by the following graph.



- Examples for the macro economic concepts are given below
 - Full employment
 - Unemployment (Underemployment of Resources)
 - Economic Recession
 - Economic depression
 - Economic Growth
 - Economic decline
 - Allocation of resources between present consumption and future consumption
 - Production efficiency
- Productive employment of all resources of an economy within a production process is called full employment
- Full employment can be shown by a point on the Production Possibility Frontier as follows.



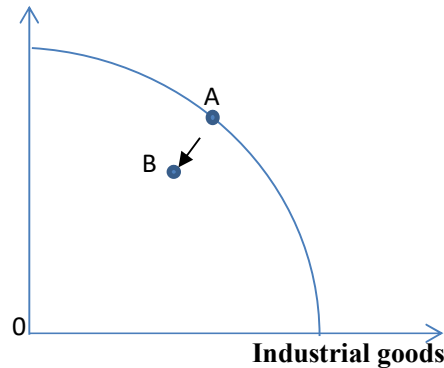
- According to the above graph point A shows full employment and point B shows the underemployment situation. Under employment means employing of resources in a way which does provide maximum productivity.

Example. Employing Sri Lankan graduates in the management services.

- According to above graph point B shows unemployment of the economy.

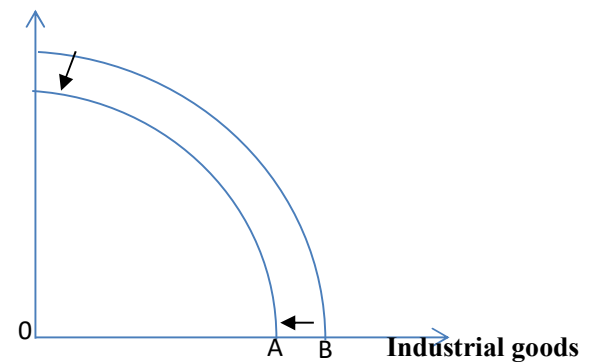
- Economic recession means decreasing of production due to decrease in demand for goods and services in an economy. Economic recession is a short term phenomenon and unemployment situation increases with it. According to above graph it can be shown by a movement from A to B.
- Long term situation of an economic recession is known as economic depression. In this situation as unemployed resources can be destroyed, Production Possibility Curve shift to the left due to decrease in resources stock. In a short term of depression, where the resources do not destroy a point will shift to the left.

Agricultural goods



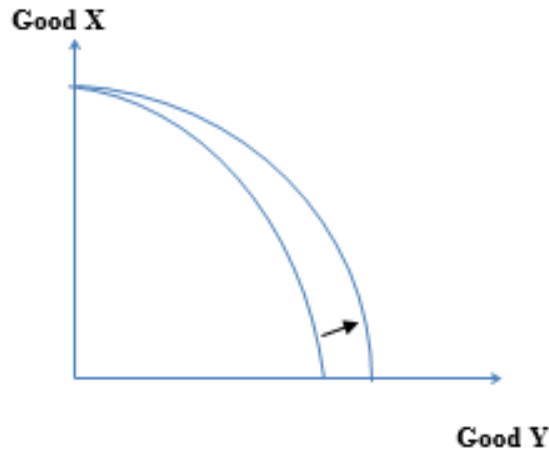
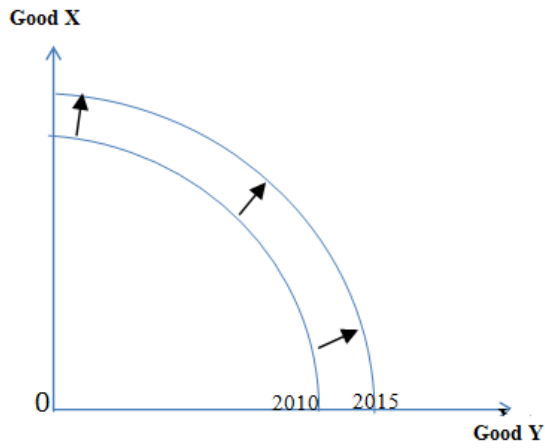
First graph

Agricultural goods



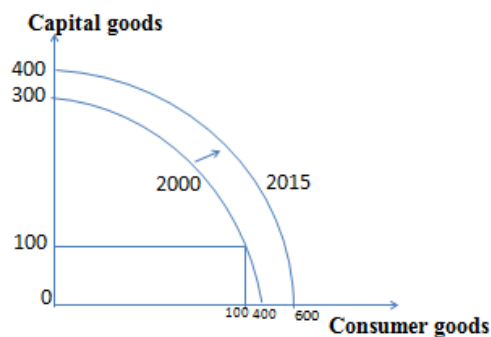
Second graph

- An economic depression situation without destroying resources can be shown by a movement from A to B in the first graph.
- According to the second graph because there is an economic depression with destroying of resources the Production Possibility Curve shifts to left side.
- Continuous increase in real output of an economy throughout a long period is called an economic growth. Production Possibility Curve shifts to the right during an economic growth situation. It can be shown by the following graph.

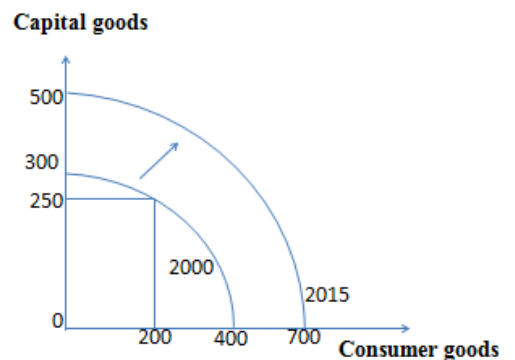


- An economy's future resource stock is determined by the way of utilizing scarce resources. If more resources are utilized for current consumption, production of capital goods will be decreased in future. In this way decrease in the production of capital goods will reduce future production possibility and it will be a barrier for economic growth.
- Following this , allocation of resources between present and future consumption is an important determination of economic growth
- It is shown by the graph below

First graph



Second graph



- According to first graph as the economy allocated more resources towards the consumption economic growth rate was lower.
- According to second graph, as the economy allocated more resource for the production of capital goods than consumer goods, economic growth rate was higher.
- If any country has the possibility to import capital goods, where they have no room to sacrifice present consumption, can reach fast economic growth by increasing investment with out limiting present consumption.
- Two main factors affect changing the production capacity of a country
 - change in resource
 - change in Productivity
- Due to change in resources stock and technology of an economy, production capacity or the production possibility of an economy changes.
- Change in resources stock of an economy takes place in two forms
 - Decrease in resources stock
 - Increase in resources stock
- Due to increase in resource stock, an economy production possibility will increase and production possibility curve shifts to the right.

Example – Discovering of new resources

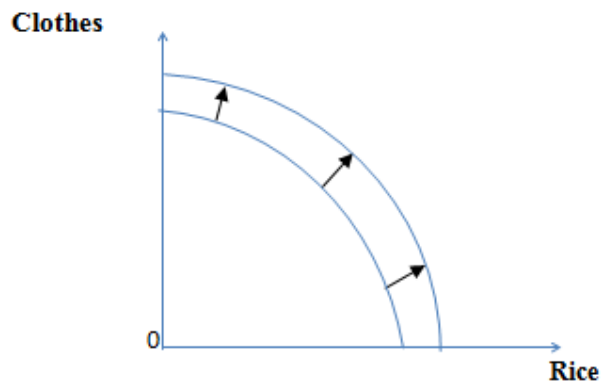
Obtaining new ownership for resources

Inflow of resources from foreign countries

Increase in resource stock trough new technology

Increase in foreign loans aids and investment

- It can be shown by the graph below



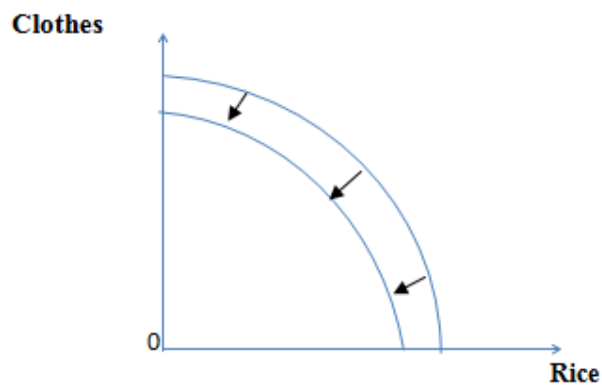
- Due to decrease in resource stock, economy's production possibility will decrease and production possibility curve shifts to the left.

Example – Destroying of resources due to war

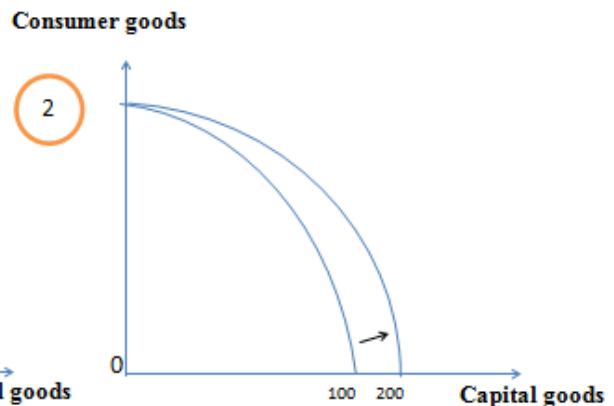
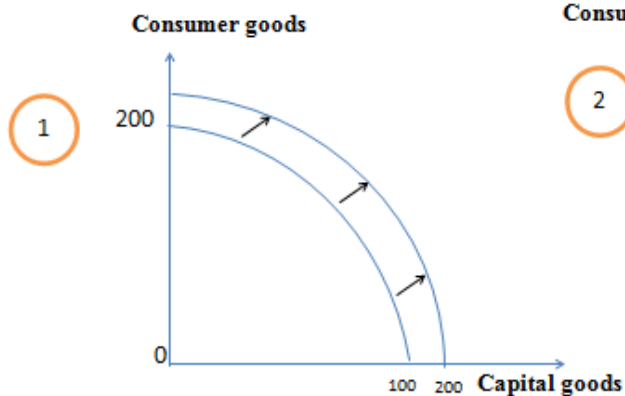
Natural disasters such as Tsunami, floods and land slides

Decrease in foreign investment

- It can be shown by the graph below



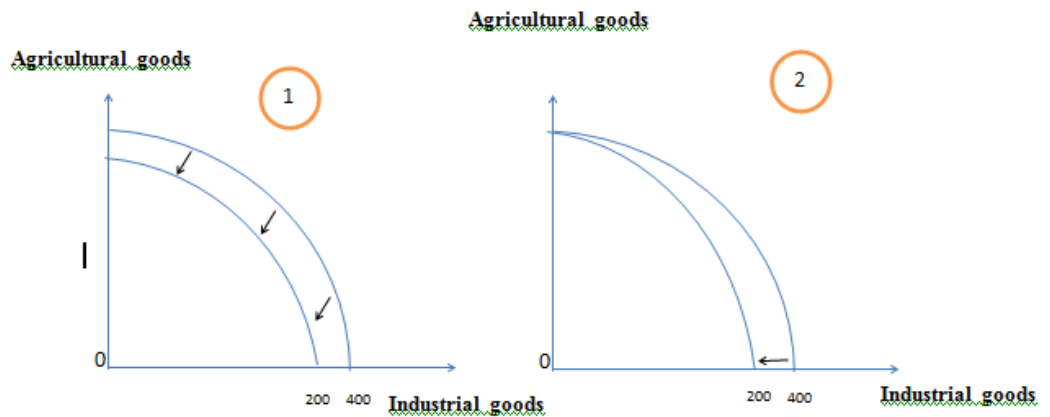
- Due to increase in productivity of resources, production possibility curve shift to the right as the production possibility of the economy increases.
Examples – Improvement in technology, new techniques, providing of training to the workers by the government.
- If increase in productivity happens only in one sector, production possibility curve will shift only from that sector.
- It can be shown by the graph below



- According to the first graph productivity of consumer and capital goods have increased, Production Possibility curve shift to the right by both side.
- According to the second graph as productivity increases only with capital good, Production Possibility Curve shift to the right only by that side.
- Due to decrease in productivity of resource production possibility curve shift to the left due to decrease in production possibility.

Example - Net out migration of skilled workers , Use of outdated techniques

- It can be show by the graph below



- According to the first graph, due to decrease in productivity of both agricultural and industrial goods production possibility curve shifts to the left. According to the second graph, due to decrease in productivity of industrial goods production possibility curve shifts to the left only by that side.

Competency 2 : Analyses demand, supply, elasticity and market equilibrium.

Competency Level 2.1 : Analyses the theory of demand and the law of demand according to determinants of demand.

Number of periods : 08

Expected Learning Outcomes :

- Defines the demand.
- Explains the difference between individual demand and market demand.
- Names the determinants of demand.
- Explains how each determinant of demand affects demand.
- Explains the demand function.
- Defines the Law of Demand.
- Present Law of Demand using demand schedule, demand curve and demand equation.
- Names price effect which is a reason for the law of demand.
- Confirms Law of Demand with the use of substitution effect and income effect.
- Explains exceptions to the law of demand.

Instructions for Lesson Planning :

- Observe, a student going to a shop.
- Examine, what the purchases are.
- Examine, the basic factors in buying those goods.
- Conduct a discussion by highlighting the following points.
 - People demand goods to fulfill their wants.
 - Factors given below create demand.
 - Want
 - Purchasing power
 - Planning to buy

- Demand based on the factors above can be named as effective demand.
- Group the students and deploy them to do the activity giving instructions.

Proposed Instructions for Learning :

- Pay attention to the topic which your group has received.
 - Individual demand
 - All persons demand
- Study the conversation received by your group.
- Define the topic
- List the determinants of demand according to the topic
- Explain how each determinant affects demand.
- Show the relationship between demand and determinant of demand through graphs.

Conversation:

Uththara, Vishva & Thilini are friends working in the same office. A part of the conversation that happened among them at the lunch break is given below.

Uththara - The price of bread increases day by day unbelievably. Therefore it is difficult to eat bread every night like previously. Now we eat different things, instead of bread.

Vishva- Now we also eat very little bread. My husband said that there was an article in the news paper that the possibility of contracting diabetes is high among people who consume bread mostly. He brings bread rarely after that article. Now his office friends also has reduced the level of consumption of bread. However, a good thing has happened due to this. Using jam and butter also has reduced. I think butter is not necessary without bread.

Thilini- Actually it is very difficult to eat bread on our salary with the price of bread. But our son likes to eat bread very much.. Because of that I have to take a loaf of bread when I go home everyday.

Uththara - Thilini, instead of bread give them string hoppers or hoppers.

Vishva- However, the people who live in the cities have not decreased their eating bread, yet.

Uththara - Why is that?

Vishva- The husband and wife of a family in the city both work. So they do not prepare dinner. Because of that, they eat bread for dinner.

Thilini- Not only that, there are more wealthy people in the city than in the village. They like to have a light food for breakfast and dinner. Therefore they eat bread although the price has increased.

Uththara - If others decrease eating bread like us, how many will reduce eating bread. If it happens like that, the demand for bread will be reduced at a higher rate.

A Guidelines to Explain the Subject Matters:

- In a certain period of time, when other factors remain constant, various quantities ready to buy at various prices of a good is called as demand.
- The demand can be classified as follows,
 - Individual demand
 - Market demand
- At a certain period of time, , the various quantities ready to buy by a person at various prices of good is individual demand.
- At a certain period of time, the various quantities ready to buy by sum of all individuals at various prices of good is called as market demand.
- Determinants of individual demand can be listed as below.
 - Price of the concerned goods(P)
 - Price of the related goods(Pn)
 - Consumer Income(Y)
 - Consumers' Taste (T)
 - Future expectations (Ex)
 - Other factors (O)
- Determinants of market demand can be listed as below.
 - Price of the concerned goods(P)
 - Price of the related goods(Pn)
 - Consumer Income(Y)
 - Consumers' Taste (T)
 - Future expectations (Ex)

- Number of buyers and the composition (N)
- Other factors (O)
- In addition to the determinants of individual demand, determinant of the number of buyers and its competition affect for the market demand.
- When showing the relationship between individual demand and determinants of demand as an equation it is named as individual demand function.

$$Q_d = f(P, P_n, Y, T, Ex, O)$$

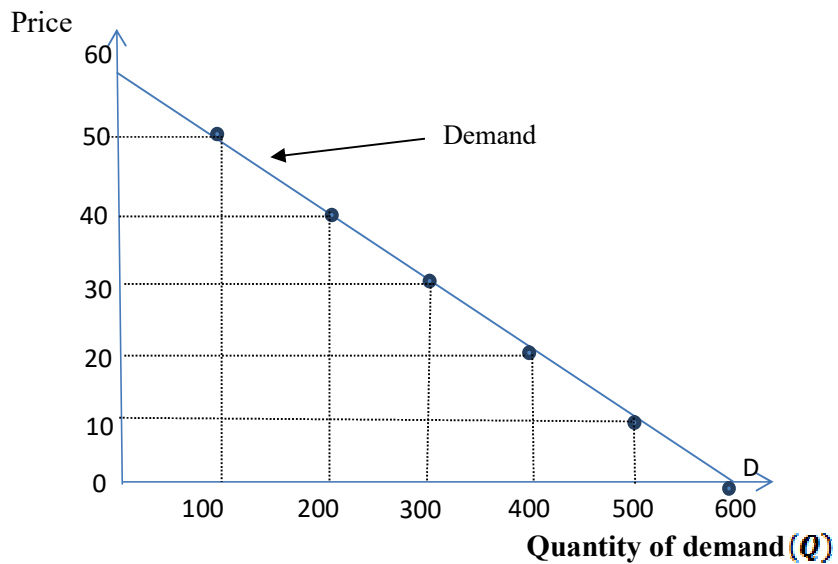
- When showing the relationship between market demand and the determinants of market demand as an equation it is named as “Market demand function”.

$$Q_d = f(P, P_n, Y, T, Ex, N, O)$$

- Analysis of the changes of demand according to the changes of any determinants of demand is called theory of demand.
- In a certain period of time, when other factors affecting demand remains constant the inverse relationship between price and the quantity demanded of goods, is called the law of demand.
- The Law of Demand has following assumptions below.
 - Considers price and quantity demanded at a certain time period
 - Other factors affecting demand remain constant except the price
 - Considers demand of a normal good
 - Considers behavior of rational buyers
- The alternative methods which represent The Law of Demand are as follows.
 - Demand schedule
 - Demand curve
 - Demand equation
- During a certain period of time, when other factors remain constant, the schedule that indicated the expected quantity demanded of consumers at alternative prices is named as demand schedule.

Price of the considering(P)	Expected quantity demand(Q)
0	600
10	500
20	400
30	300
40	200
50	100
60	0

- In a certain period of time, when other factors remain constant, the curve showing the quantity demanded at alternative prices is called a demand curve.



-
- In a certain period of time, when other factors remain constant, the equation showing a relationship between quantity demanded and the price of the good concerned is called demand equation.
- The common equation of a liner demand curve which slopes downward can be stated as below,

$$Q_d = a - bp$$

Q_d = Quantity demanded(dependent variable)

a = Quantity demanded at zero price

b = Variance of the slope of the demand curve $b = \frac{\Delta Q_d}{\Delta P}$

P = Price of the concerned goods(independent variable)

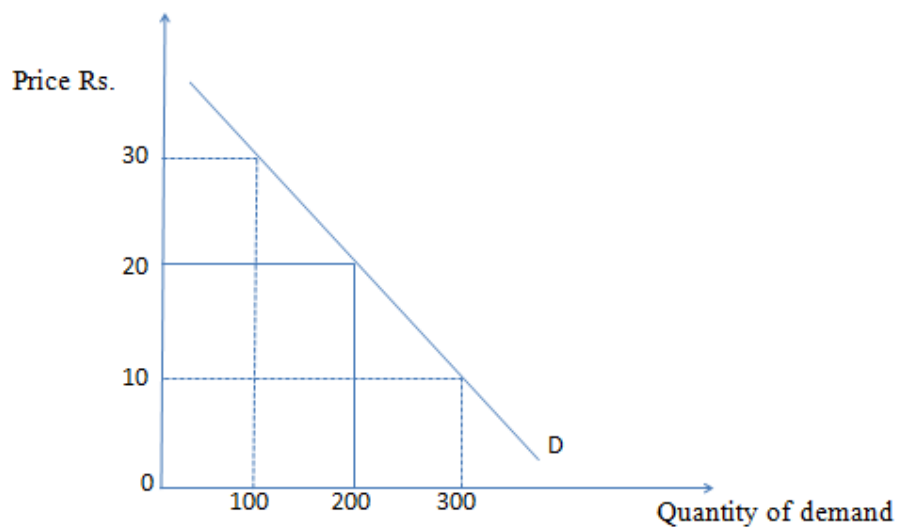
- The inverse relationship between price and quantity demanded can be presented by a demand equation.
- The related demand equation to the above demand curve has been given as follows.

$$a = 600 \quad b = \frac{\Delta Q_d}{\Delta P} = \frac{-100}{10} = -10$$

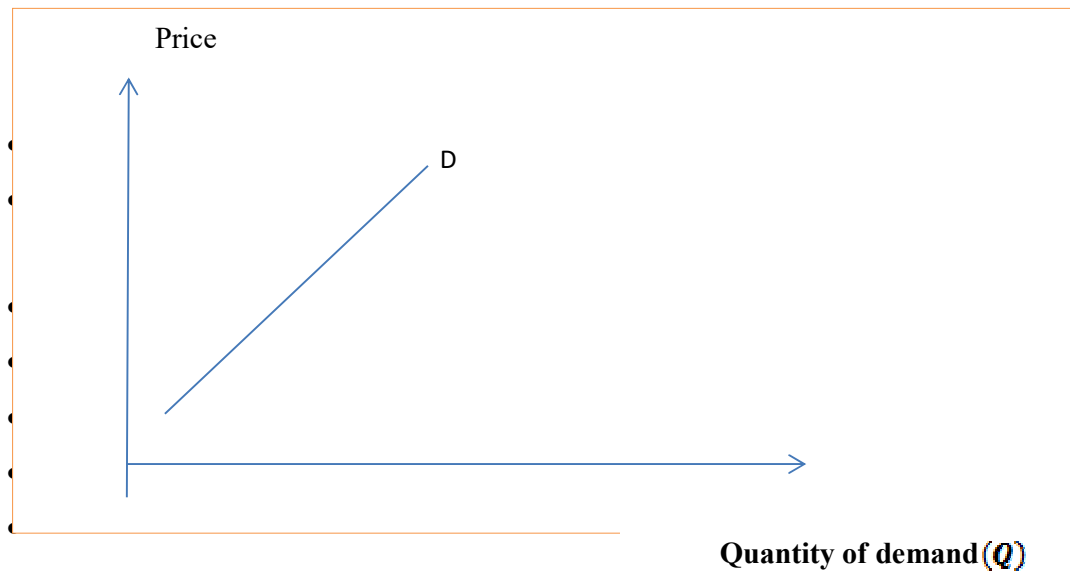
$$Q_d = 600 - 10P$$

- The demand curve for a normal good slope downward.
- The demand curve of a normal goods slope is downwards because there is an inverse relationship between price and quantity demanded.
- The reasons for the inverse relationship between price and quantity demanded are given below.
 - Substitution effect of a price change
 - Income effect of a price change
- When other factors remain constant including the price of substitute goods, due to increase or decrease of the price of concerned goods, change of quantity demand of the considering good as a result of increase or decrease in relative price of the good is known as substitute effect
- When other factors remain constant including the nominal income of consumers, changes of the quantity demanded according to the changes of real income is called income effect.
- The income effects shows a positive relationship when the price of a normal good increases or decreases. The substitution effects of a normal good always shows a negative relationship when the price of a good decreases or increases.
- When price of a normal good increases or decreases the operation of price effect is shown by the schedule below.

Change in Price	Substitution effect	Income effect	Price Effect
Decrease price	- (Negative)	+ (Positive)	- (Negative)
Increase price	- (Negative)	+ (Positive)	- (Negative)



- Increase of the quantity demanded from 200 to 300 when the price decrease from Rs.20.00 to Rs. 10.00 is called expansion in demand.
- Decrease of the quantity demanded from 200 to 100 when the price increase from Rs.10.00 to Rs. 20.00 is called contraction demand.
- Exceptions to the law of demand are given below.
 - Giffen goods
 - Demonstrative goods
- There is a positive relationship exists to between price these goods and the quantity demand of as the quantity demanded increases when the price increases and the quantity demanded decreases when the price decreases. Because of this demand curve slopes upwards.



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- When the price of a Giffen good increases or decreases the substitution effects always shows a negative relationship and income effects shows a strong negative relationship.
- When increase the price of demonstrative goods the quantity demanded increases to shows the artificial status of the buyer.
 Example: Increase the demand for expensive vehicles and diamonds to show-off.
 Therefor demonstrative goods show an exception to the of demand.

Competency Level 2.2 : Compares the differences between the changes of quantity demanded and change in demand.

Number of periods :06

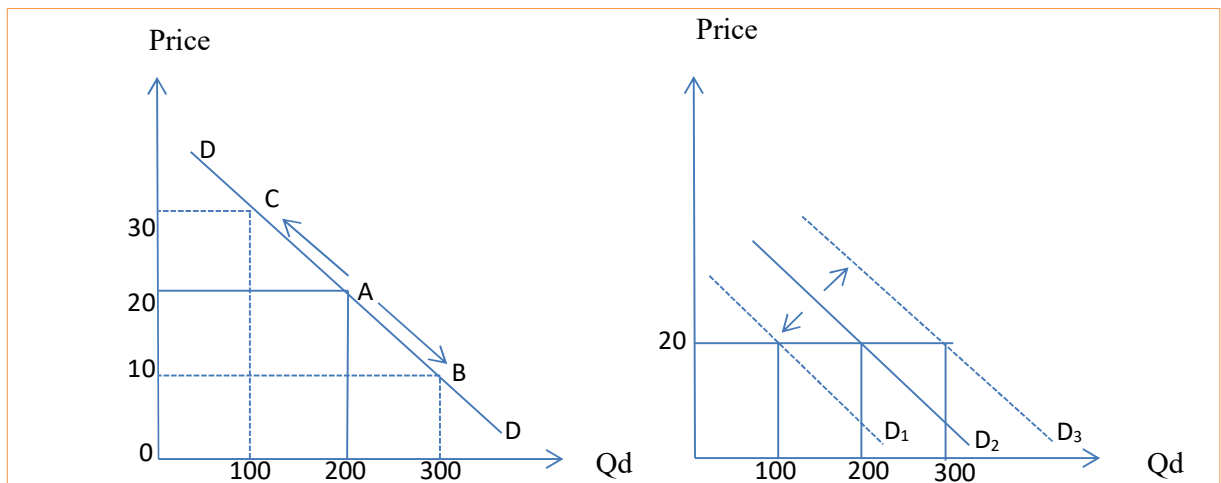
Expected Learning Outcomes :

- Compares the differences between changes of quantity demanded and change in demand presented separately.
- Presents the factors affecting change of quantity demand and change in demand separately.
- Analyses the change in quantity demanded by a demand curve.
- Analyses the change in demand with a demand curve,

A Guidelines to Explain the Subject Matters:

- When the other factors constant remain , except the price of concerned goods, changes of the quantity demanded in response to the increase or decrease of the price of the considering good is called changes of quantity demanded.
- When other factors are constant, if the price of the concerned good is increased the quantity demanded is decreased and the point on the demand curve move upward along the demand curve. This situation is defined as a contract demand.
- When other factors are constant, if the price of the concerned good decrease the quantity demanded increases and the point on the demand curve moves downward along the demand curve.
- This situation is defined as expansion demand.
- When the price of the concerned goods remains constant, change of demand according to the change of other factors is known as change in demand.

- Increase of the demand response to the changes of other factors of demand while the price of the concerned goods remains constant is called increase in demand and demand curve shifts to the right.
- Decrease of the demand response to the changes of other factors of demand while the price of the concerned goods remains constant is called decrease in demand and demand curve shift to the left.
- The difference between change in quantity demand and change in demand can be shown by the diagram below.



Due to change in quantity demand a point on the demand curve moves upward or downward along the demand curve

Due to change in demand, demand curve shifts to the left or right

0

- The following reasons affect to shift of the demand curve to the right.
 - Increase of the price of substitute goods
 - Decrease of the price of complementary goods
 - Increase of the consumer income
 - Increase of the consumer taste
 - Expect that the price will increase in the future
 - Increase of the number of buyers

- The following reasons affect shift of the demand curve to the left .
 - Decrease of the price of substitute goods
 - Increase of the price of complementary goods
 - Decrease of the consumer income
 - Increase of the preferences of consumers
 - Expect that the price will decrease in the future
 - Decrease of the number of buyers

Complementary Level 2.3 : Defines and analyses the elasticity of demand

Number of period : 08

Expected Learning Outcomes :

- Defines the elasticity of demand.
- Names the types of elasticity of demand.
- Defines the price elasticity of demand.
- Defines the point price elasticity of demand, presents its formula.
- Calculates the point price elasticity of demand using numerical data.
- Defines arc elasticity of demand.
- Calculate arc elasticity of demand using numerical data
- Calculates the price elasticity by using given data.
- Presents the types of price elasticity of demand according to the coefficient.
- Explains the relationship between price elasticity of demand and slope of the demand curve.
- Calculates the price elasticity of demand of a certain price, when a demand equation has given.

Instructions for Lesson Planning:

- Presents the following conversation that has done with a bakery producer to the students.

Question – What do you produce(make) in your bakery?

Answer – Bread and buns

Question – How much of breads sell per day?

Answer – 2000 units of bread and 1000 units of buns

Question – Since What was the market price of bread?

Answer – Last month the market price was Rs. 60.00 per bread. By that the time we sold 1500 units of bread per day. The price of a bun was Rs.25.00 and we sold 800 units per day.

- Inquire from the students about the market behaviour of the price and quantity demanded.
- Lead a discussion highlighting factors the below.
 - When the price of bread change, the quantity demanded has changed.
 - The quantity demand of buns has changed according to the change of price.
 - Thus the consumers' demand change along with a change in market price.
 - The change in quantity demanded according to the change in price can be lined-up.
- Group the students and get them do the following activities.

Propose Instructions for Learning :

- There are three statements regarding the changes of demand of three goods. Pay attention to the statement assigned to your group.
 - The quantity demand decreases from 50 to 30 units when the price increases from Rs.5.00 to Rs.10.00.
 - The quantity demanded decreases from 80 to 20 units when the price increases from Rs.5.00 to Rs.10.00.
 - The quantity demanded decreases from 50 to 10 units when the price increase from Rs.5.00 to Rs.10.00.
- Create a demand schedule with the statement given to you.
- Calculate the percentage changes of price and percentage change of quantity demanded Separately.
- Pay attention to the answer when dividing the percentage changes of quantity demanded by the percentage changes of price.

A Guidelines to Explain the Subject Matters:

- Measure the responsiveness of the quantity demanded to the changes any of the determinants of demand, which can be measured quantitatively, is named as elasticity of demand.
- Three types of elasticity of demand can be identified as follows,
 - Price elasticity of demand
 - Cross price elasticity of demand

- Income elasticity of demand
- Measure the percentage change of quantity demanded in response to the percentage change of price is identified as price elasticity of demand.
- There are two ways of calculating the price elasticity of demand.
 - Point price elasticity of demand
 - Are price elasticity of demand
- When other determinants of demand remain constant measure the percentage change in quantity demanded according to the small percentage change in price at a particular point on the demand curve is known as point price elasticity of demand.
- The following formula used to measure the point price elasticity.

Point Price elasticity of demand	$\frac{\text{Percentage change in quantity demand}}{\text{Percentage change in price}}$	$\frac{\frac{\Delta Q}{Q} \times 100}{\frac{\Delta P}{P} \times 100}$
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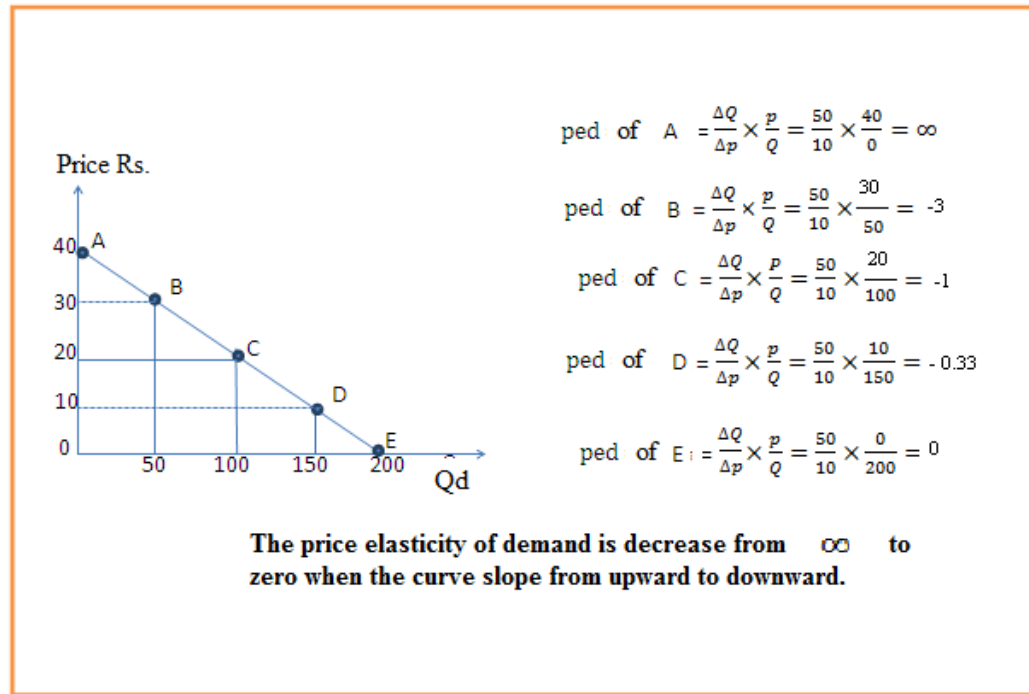
$E_d =$	$\frac{\frac{\Delta Q}{Q} \times 100}{\frac{\Delta P}{P} \times 100}$	=	$\frac{\Delta Q}{Q} \div \frac{\Delta P}{P}$	=	$\frac{\Delta Q}{Q} \times \frac{P}{\Delta P}$	=	$\frac{\Delta Q}{\Delta P} \times \frac{P}{Q}$
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$$\frac{\Delta Q_d}{\Delta p} = \text{Variance of the slope in demand curve.}$$

$$\frac{p}{Q_d} = \text{ratio of between the price and quantity.}$$

- The point price elasticity of demand spread from infinity to zero when the demand curve slope to downward curve slopes downward.

- In liner demand curve which slopes downward, variance of the slope is constant at every point and elasticity changes from point to point as the ratio between price and the quantity demand decreases.



- Measure the relative percentage change in quantity demanded to a large percentage change in price between two certain points on the demand curve is defined as arc price elasticity of demand.

It can be calculated as below.

$$AE_d = \frac{\Delta Q}{\Delta p} \times \frac{P_1 + P_2 / 2}{Q_1 + Q_2 / 2} = \frac{\Delta Q}{\Delta p} \times \frac{P_1 + P_2}{Q_1 + Q_2}$$

AE_d - Arc elasticity of demand

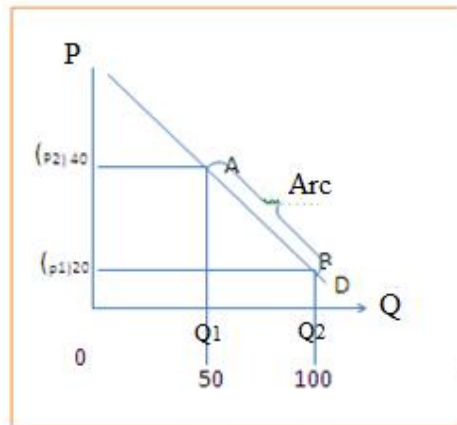
ΔQ - Changes of quantity demanded

ΔP - Changes of price

$(P_1 + P_2) / 2$ - Average price

$(Q_1 + Q_2) / 2$ - Average quantity

- Demand curve of a certain good is given below.



$$\begin{aligned}
 \text{Arc elasticity of point A-B} &= \frac{\Delta Q}{\Delta p} \times \frac{P_1+P_2}{Q_1+Q_2} \\
 &= \frac{50}{20} \times \frac{20+40}{50+100} \\
 &= \frac{50}{20} \times \frac{60}{150} \\
 &= \frac{1}{3} \times \frac{3}{1} \\
 &= 1
 \end{aligned}$$

- In the above diagram in every point between A and B arc elasticity is equal to one.

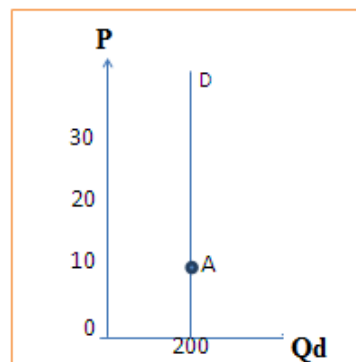
According to the value of coefficient there are five types of price elasticity can be identified.

1. Perfect inelastic demand (Ped = 0)
2. Inelastic demand (ped < 1)
3. Unitary elastic demand (Ped =1)
4. Elastic demand (ped >1)
5. Perfect elastic demanded (Ped =∞)

Perfectly inelastic demand-

There is no percentage change in quantity demanded although the price of the concerned good change by some percentage. Then the situation it is known as perfectly inelastic demand.

P	Qd
10	200
20	200



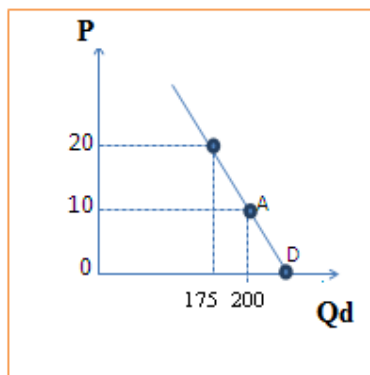
$$\begin{aligned}
 \text{PED in point A} &= \frac{\Delta Q}{\Delta p} \times \frac{P}{Q} \\
 &= \frac{0}{10} \times \frac{10}{200} \\
 &= 0
 \end{aligned}$$

- In inelastic demand, demand curve is parallel to the vertical axis.
- At every point elasticity is equals to zero.

Inelastic demand

If the percentage changes of quantity demanded is less than the percentage change of price it is known as inelastic demand.

P	Qd
10	200
20	175



$$\begin{aligned}
 \text{PED in point A} &= \frac{\Delta Q}{\Delta p} \times \frac{P}{Q} \\
 &= \frac{25}{10} \times \frac{10}{200} \\
 &= -0.12
 \end{aligned}$$

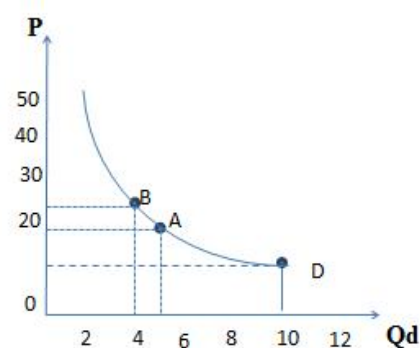
- In inelastic demand the coefficient value is less than one at any points below the middle point of the demand curve.

Unitary elastic demand

If the percentage change in quantity demanded is equal to the percentage change in price of the good concerned is called as unitary elastic.

P	Qd	Expenditure of Consumer
10	10	100
20	5	100
25	4	100

$$\begin{aligned}
 \text{Arc elasticity of demand A-B} &= \frac{\Delta Q}{\Delta p} \times \frac{P_1 + P_2}{Q_1 + Q_2} \\
 &= \frac{1}{5} \times \frac{20 + 25}{4 + 5} \\
 &= \frac{1}{5} \times \frac{45}{9} \\
 &= -1
 \end{aligned}$$

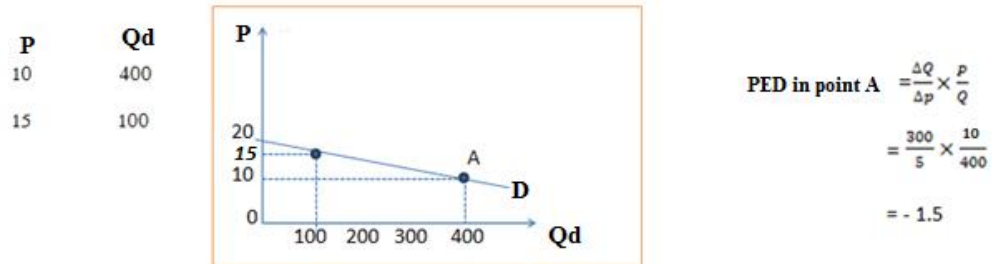


- In unitary elastic demand the demand curve is a rectangular hyperbola curve.

- Coefficient is equal to one at any point on the demand curve.
- The consumer expenditure which is the multiplication of the price and quantity demanded is constant in every point of the demand curve.

Elastic demand

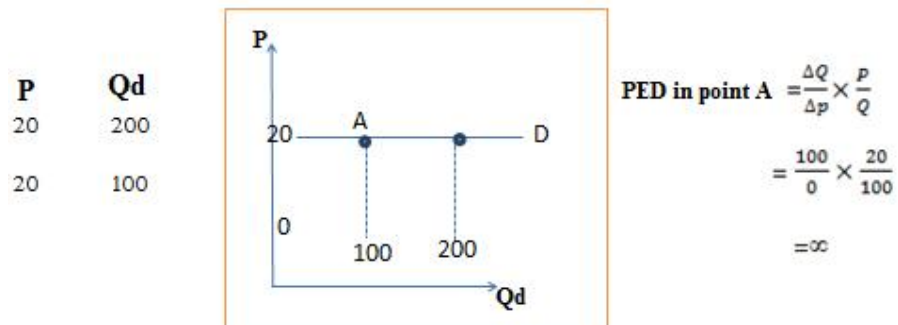
- If the percentage change in quantity demanded of a particular good is greater than the percentage change in the price it is known as elastic demand.



- In elastic demand coefficient is more than one in every point over to the middle point of the demand curve.

Perfectly elastic demand_

With a small change in a price of the concerned good if the quantity demanded changed a large percentage it is known as perfectly elastic demand.



- The ratio between the absolute change in quantity demanded and the absolute change in price of the concerned good is the variance of the slope of the demand curve.
- Price elasticity of demand is the ratio between the percentage change in quantity demanded to the percentage change in price of concerned good where other determinants remain constant.

$$ped = \frac{\Delta Q\%}{\Delta P\%}$$

- It can be calculated by ratio of the absolute change in quantity demanded to absolute change in price of the concerned good or the variance of the slope of the demand curve $\left(\frac{\Delta Q}{\Delta P}\right)$ multiplied by the ratio between quantity demanded and price $\left(\frac{P}{Q}\right)$ can be calculate by the multiplication.

$$\begin{aligned} \text{Ped} &= \frac{\Delta Q}{\Delta P} \times \frac{P}{Q} \\ &= b \times \frac{P}{Q} \end{aligned}$$

- The price elasticity of demand relevant for a certain price can be measured when demand equation is given.

Following is an example for that

If demand equation is $Q_d = 300 - 5p$ the elasticity of demand at price 10 can be measured as below.

$$\begin{aligned} \text{Ped} &= b \times \frac{P}{Q} \\ &= 5 \times \frac{10}{250} \\ &= -0.2 \end{aligned}$$

Complementary Level 2.4 : Examines rational decision making based on price elasticity of demand.

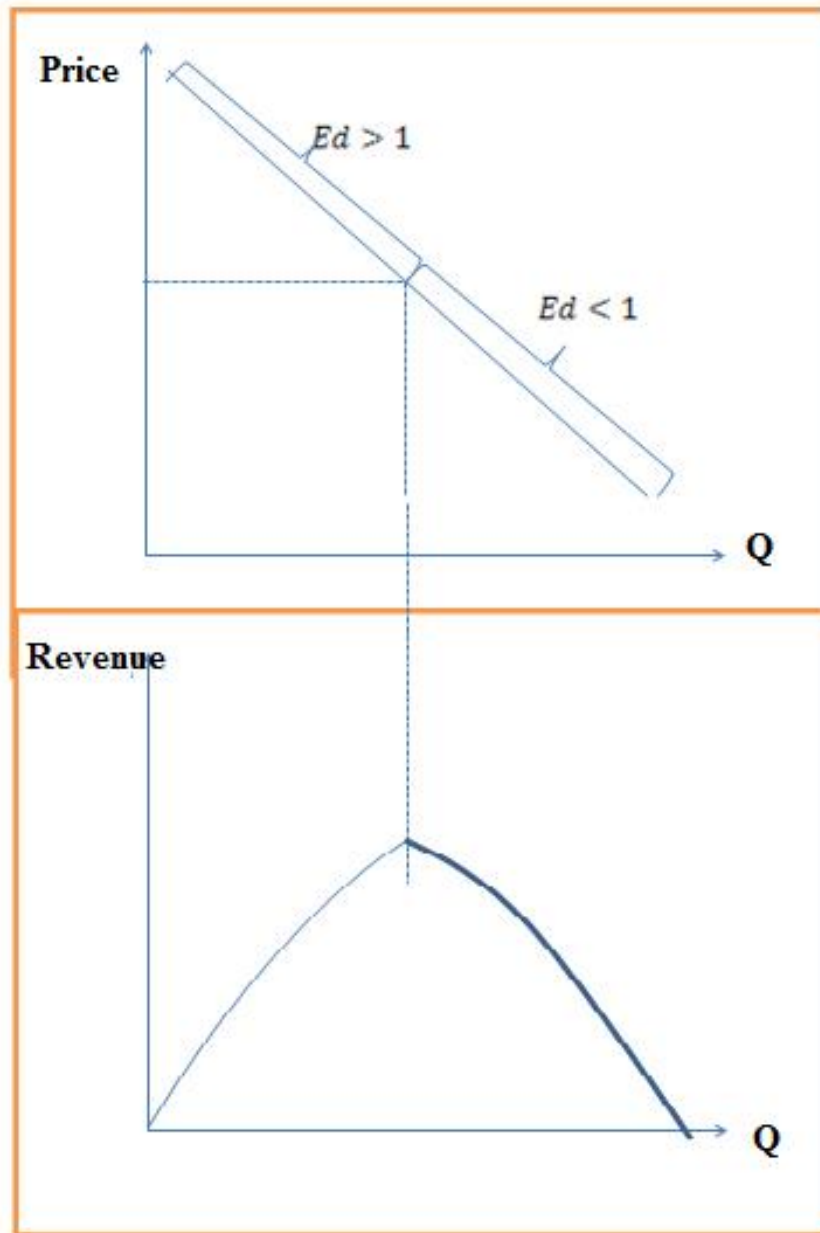
Number of period : 06

Expected Learning Outcomes:

- Names determinants of price elasticity of demand.
- Analyses how determinants of price elasticity of demand influences price elasticity of demand.
- Describes the change of consumer outlay / producer revenue with a change in price of the concerned good at a situation of price elasticity of demand is given.
- Explains the practical importance of price elasticity of demand.

A Guidelines to Explain the Subject Matters:

- The price elasticity of demand at the market differs from one good to another. Accordingly some goods have inelastic demand and some goods have elastic demand.
- According to that the factors which determined that elastic or inelastic demand of a good is identified as determinants of price elasticity of demand.
- The determinants of price elasticity of demand are given below.
 1. Nature of the concerned good as essential or as luxury of the concerned good
 2. Number of substitutes available to a good and its closeness.
 3. Percentage of the income spent on the good.
 4. The alternative uses of goods
 5. The time which take to adjust to the price change.
- The changes in consumer expenditure according to the changes of price can be recognized when the price elasticity of demand of the considering good is given. There is a relationship exists between price elasticity of demand and consumer expenditure/producer revenue. It can be presented by a graph as below.



- According to the above graph when decrease the price area of elastic demand, increase the producer revenue. The producer revenue get the maximum value in the mid point of demand curve. When price decrease the area of inelastic demand the producers revenue also decrease.
- The relationship between consumer expenditure and elasticity of demand can be presented by a schedule as below.

Elasticity	Value of coefficient of elasticity	Change in price	Consumer Expenditure/ Producer revenue
Perfect elastic	PED = ∞	Increase	Zero
		Decrease	Infinity
Elastic	PED > 1	Increase	Decrease
		Decrease	Increase
Unitary	PED = 1	Increase	Constant
		Decrease	Constant
Inelastic	PED < 1	Increase	Increase
		Decrease	Decrease
Perfectly Inelastic	PED = 0	Increase	Increase
		Decrease	Increase

- The practical importance of price elasticity of demand are,
 - The concept of elasticity is important to make decisions for economic policy compilers, producers and consumers.
 - It can be predict the effect for consumer expenditure or producer revenue when price increase or decrease.
 - Determination of when out put income is maximized.
 - Monopoly power can be recognized in a business firm
 - Can be used to compile the economic policies.
 - To choose concerned goods when imposing taxes.

Competency Level 2.5 : Examines the rational decision making according to the cross price elasticity of demand.

Number of Periods : 06

Expected learning Outcomes :

- Defines cross price elasticity of demand
- Calculates the cross price elasticity by using statistical data.
- Separates the couple of substitute goods and the couple of complementary goods. according to the efficiency of cross price elasticity of demand.
- Illustrates the practical importance of cross price elasticity of demand.

Instructions for Lesson Planning:

- Get a student to present the following incident to the class.

Jayanath went to the boutique to buy bread and butter for breakfast. But he noticed that the price of string-hoppers was less than that of bread. Therefore he has decided to buy string-hoppers instead of bread. Likewise, he did not buy butter because he didn't buy bread. Jayanath came home with string-hoppers for breakfast.

- Inquire from the students their ideas about the incident.
Lead a discussion by highlighting the followings,
 - String-hopper is a good substitute for bread
 - Butter is a complementary good for bread.
 - Increasing the price of a goods has an effect on the demand for another goods.
 - There are two types of related goods
 - Substitute goods
 - Complementary goods
- Group the students and provide instructions to do the task

Propose Instructions for Learning :

- Following there are the two statements that indicate how the demand for two goods change, along with the change in the price of the two goods.
 - When the price of bread increases from Rs. 50 to Rs. 60 the demand for buns from 300 to 400 units increases.
 - When the price of bread increases from Rs. 50 to Rs. 120, the demand for tea from 200 to 150 units decreases.
- Create a demand schedule using the statement given to your group
- Name the concerned goods and related goods separately.
- Calculate the percentage change of the price the related goods and percentage, change of the quantity demand of the concerned goods.
- Pay attention to the value received after dividing the percentage change of quantity demanded of the concerned good by the percentage change of the price of the related goods.

A Guidelines to Explain the Subject Matters:

- The changes of the price of one product affects change in the demand for other goods.
- When other factors affecting demand constant which measures the responsiveness of the change of quantity demand of the concerned goods to the change of the price of relative goods, is known as cross price elasticity of demand.
- The cross price elasticity of demand can be calculated by using the following formulas.

$$CEd = \frac{\text{Percentage change in demand}}{\text{Percentage change in price}}$$

$$CEd = \frac{\Delta Q_{dx}}{\Delta P_y} \times \frac{P_y}{Q_{dx}}$$

CEd - Cross price elasticity of demand

ΔQ_{dx} - Change in demand of goods "X"

ΔP_y - Change in price of the goods "Y"

P_y - Before price of the related goods of "Y"

Q_x - Before quantity demanded of goods "X"

- If there is a direct relationship between the price of related goods and the demand of the concerned goods the co-efficient will get a positive value and the good is considered as a substitute for the concerned goods.
- If there is a negative (inverse) relationship exists between the price of the related goods and the demand of the concerned goods the coefficient will get a negative value and the good is considered as a complementary good to the concerned good.
- The practical important of cross price elasticity can be analyzed as below.
 - Analyse the inter-relationship between two goods.
 - Determine the market competition of goods
 - Forecast the relative changes in demand for goods and services

Competency Level 2.6 : Examines taking rational decisions making according to the income elasticity of demand.

Number of Period : **06**

Expected Learning Outcomes :

- Defines the income elasticity of demand.
- Calculates the co-efficient of income elasticity of demand using statistical data.
- Classifies the goods according to the income elasticity of demand.
- Shows importance of income elasticity of demand.

Instructions for Lesson Planning:

- Get a student to read the following incident.
Vishvanath investigates how an external incidents affect the sales of his retail shop. He comments on the sales of his boutique following the recent salary increase of the government servants things such as "Demand for grapes, cosmetics and ice cream increased due to the increase of salaries. However the demand for rice did not increase much. But people's were demand butter stated to demand margarine".
 - Inquire students' opinions about the incident.
 - Write the important factors on the black-board
 - Conduct a discussion highlighting the following factors.
 - Change of demand due to a change in income
 - Change of the income does not affect some goods
 - There are some goods in which demand decreases with increases in income
- Group the students and provide necessary instructions to do the task.

Propose Instructions for Learning :

- Pay your attention to the incident received by your group

First incident :

Income of Nimal	Quantity demand for rice (monthly)
10000	40
15000	50

Income of Kamal	Quantity demand of cosmetics (monthly)
40000	1
50000	4

Income of Bimal	Quantity demand for refitted tyre monthly
40000	8
50000	4

-
-
-
- Calculate the percentage changes of income and percentage changes of demand, using the statement received by your group.
- Calculate the coefficient of income elasticity by dividing the percentage change of demand by the percentage change of income.

A Guidelines to Explain the Subject Matters:

- The change of demand for each good with a change in income differ at various situations.
- When other factors affecting demand remain constant measure the responsiveness of the percentage change of demand to a percentage change of income is known as income elasticity of demand.
- Income elasticity of demand can be measured by using the following formula.

$$IEd = \frac{\text{Percentage change in demand}}{\text{Percentage change in income}}$$

$$\text{IEd} = \frac{\Delta Qd}{\Delta y}$$

$$\text{IEd} = \frac{\Delta Qd}{\Delta y} \times \frac{Py}{Qd}$$

IEd- Income elasticity of demand.

ΔQ - Change in demand

Δy - Change in income

Y - income before

Q - quantity demanded at first income

- When there is a direct relationship between the income and demand of the concerned goods coefficient will get a positive value and it is a normal goods.
- When the changes of demand is grater than the change of income the value of coefficient is positive more than one and it is a luxury good.
- When the changes of demand is less than the changes of income, the value of the coefficient is positive and less than one. It is an essential good.
- When there is an inverse relationship between the changes of demand and income, the value of the coefficient has a negative value and it is an inferior good.
- The practical importance of income elasticity of demand can be explained as follows:
 - goods can be classified as essential, luxury and inferior goods
 - can be forecast, how the demand changes according to the changes in income.

Competency Level 2.7 : Analyses the Theory of Supply and the Law of Supply based on determinants of supply.

Number of Periods : **08**

Expected Learning Outcomes :

- Defines supply.
- Compares the difference between firm's supply and market supply.
- Names determinants of supply.
- Presents the relationship between supply and determinants of supply using the supply function.
- Defines The Law of Supply.
- Presents the Law of Supply with supply schedule, supply curve and supply equation.
- Analyses The Law of Increasing Opportunity Cost as a reasons for the Law of Supply.

Instructions for lesson planning:

- Inform to children go to the school canteen and ask about supply which are selling and get the details.
- Discuss with children according to the previous details about, selling food items everyday quantities selling everyday, determinants which determine to change the quantity.
- Conduct the discussion by through the following:
 - Supply is some quantity of good in words
 - In an economic way this word gives broad meaning more than that.
 - The quantity supplied of good which supply for the market by a firm is known as supply of a firm.
 - The total sum of all firms quantity supplied for a certain good is known as market supply.
 - Various determinants are effected to determine the supply.
- Group the students in a proper way and provide the instructions to do the task.

Proposed Instructions for Learning:

- Pay attention to the topic which your group gain through the following
 - Supply of firm A
 - Supply of firm B
 - Supply of firm C
 - Market Supply
- Complete the supply column which your group get according to the topic.
- Create a supply curve by using the vertical axis to the price and horizontal axis to the quantity supplied according to that information.
- By considering the shape of created supply curve, explain the relationship between price and quantity supplies of good.

Price of X	Supply of firm A	Supply of firm B	Supply of firm C	Market supply
10	..... ...	50	30	.....
20	30	.....	40	.....
30	40	90	.....	.....
40	..... .....	110	.....	.....
50	60	.....	70	.....

A Guidelines to Explain the Subject Matters:

- At a certain period of time the various quantities that the producers are willing and able to supply, at alternative prices is called supply in economics.
- Supply can be categorize as follows,
 - Supply of a firm (Institutional supply)

- Market supply
- An economic unit that produces goods and services using resources for supply is known as an institute.

Example – A farmer who cultivates paddy for sale

- In a certain period of time the amount willing to supply at alternative prices by such as institution is known as institutional supply.

Example – The Kilograms of paddy that the farmer sells in alternative prices

- The sum of total institutions product of a particular good or services is known as a market supply.

Example – The sum of all farmers who grow paddy for sale.

- The sum of all institutions supply is called market supply.

Example: Kilograms of paddy sell by farmers at alternative prices.

- The determinants of firm's supply can be listed as follows.
 - Price of concerned good (P)
 - Price of inputs (C)
 - Technology (T)
 - Prices of related goods (Pn)
 - Expectations of producers (Ex)
 - Government Policies (G)
 - Other factors (O)
- When deciding of market supply number of producers add to the factors that determine a firm's supply.
- The equation which shows the relationship between institutional supply and its determinants is the function of firm's supply. It can be indicated as follows.

$$Q_s = F(P, C, T, P_n, Ex, G, O)$$

- The equation that indicate the relationship between determinants of market supply and its determinants is the function of market supply. It can be shows as follows

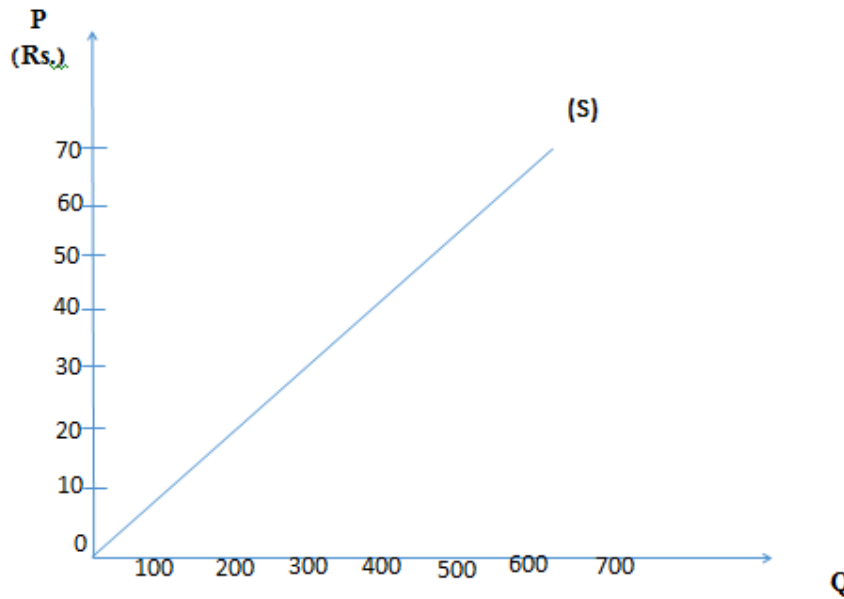
$$Q_s = P (P, C, T, P_n, Ex, N, O)$$

- Analysis the way of change in supply of a concerned good according to the change in determinants of supply is knows as theory of supply.
- The law of supply is the positive relationship exits between price of the concerned good and the quantity supplied when other determinants of supply remain constant at a certain period of time.
- The law of supply can be illustrated using following methods.
 - By a supply schedule
 - By a supply curve
 - By a supply equation
- At a certain period of the schedule which shows various quantities expected to supply at various prices when other determinants of supply remain constant is known as supply schedule. It can be indicated as below.

Price of concerned good	Quantity supplied of good
0	0
10	100
20	200
30	300
40	400
50	500
60	600
70	700

- At a certain period of time when other factors affecting supply remain constant.
- The curve which draws connecting various quantities expected to supply at various prices is known as the supply curve. It can be illustrated as follows

S



- At a certain period of time other factors affecting supply remain constant illustration of the positive relationship between price and the quantity supplied using a geometric statement is identified as supply equation.

$$Q_s = a + bp$$

Q_s = Quantity supplied(dependent variable)

a = Horizontal intercept (Quantity supplied in price zero)

b = how change in quantity supplied when price change in one unit or price coefficient $\left(\frac{\Delta Q_s}{\Delta p}\right)$

P = Price of concerned good

Example $Q_s = 0 + 10p$

- The Law of Increasing Marginal Cost affecting to the law of supply.
- The Law of Increasing Opportunity Cost states that when the production of a particular good increases the opportunity cost also increases.
- Producers tend to produce more only if price increase easier to cover the cost because if they increase the production opportunity cost also increase.)

- As the marginal cost increases with output, producers tend to produce more only if the price of the good increases in a way to cover increasing marginal cost.

Competency Level 2.8 : Compares the difference between change in quantity supplied and change in supply.

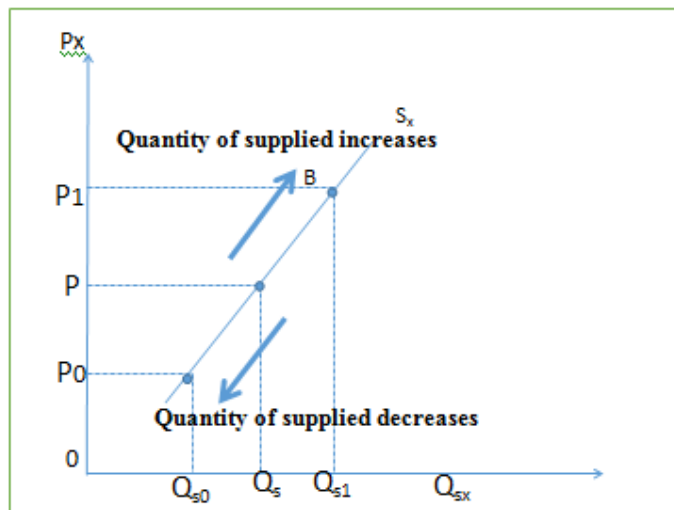
Number of Periods : **06**

Expected Learning Outcomes :

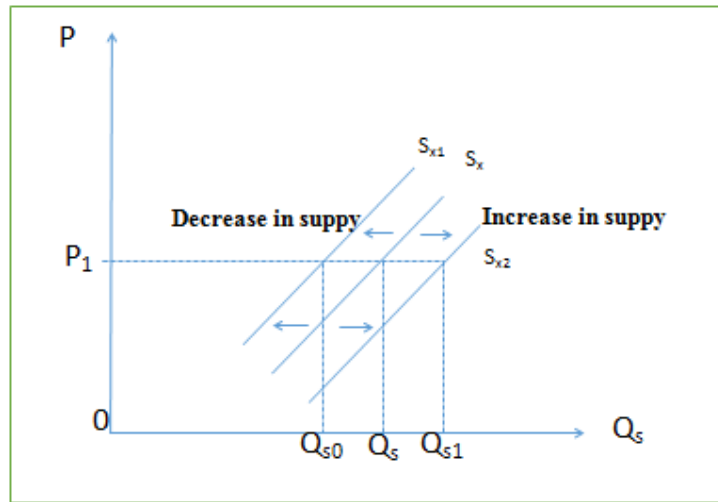
- Presents the factors affecting changed in quantity supplied of goods and change in supply of goods separately.
- Analyses the change in quantity supplied according to the change in price using a supply curve.
- Analyses the change in supply with supply curves, where of other determinants change while price of the concerned goods remain constant.

A Guidelines to Explain the Subject Matters:

- When other factors affecting supply remain constant in quantity supplied of a good related to a change in price of the considering good is known as change in quantity supplied.
- When all other determinants remain constant if the price of goods increases, the quantity supplied increases. Then the point on the supply curve moves upward along the curve.
- When all other determinants remain constant if the price of goods decreases, the quantity supplied decreases, then the point on the supply curve moves downward along the curve.



- Increase or decrease in supply when all other determinants of supply change with the price of the goods remains constant, is known as change in supply.
- The Shift of a supply curve to the left when other factors affecting supply change with the price remaining constant is decrease in supply.



Concept	Price of the concerned goods	Other determinants of supply
Change in quantity supplied	Changes	Constant
Change in supply	Constant	Changes
Reasons for shift of the curve to the right	Reasons for shift of the curve to the left	
1. Decrease in the price of related goods. 2. Decrease in the price of inputs. 3. Development technology 4. Increase in the number of suppliers 5. Cut-off of the government taxes. 6. Supply of subsidies. 7. Expectation that the price will reduce in the future.	1. Increase in the price of related goods. 2. Increase in the price of inputs. 3. Use of outdated technology 4. Decrease in the number of suppliers 5. Increase of the government taxes for suppliers 6. Cut off of the subsidies. 7. Expectation that price will increase in the future.	

Competency Level 2.9 : Analyses the importance of price elasticity of supply with estimating its value.

Number of Periods : **06**

Expected Learning Outcomes :

- Define price elasticity of supply.
- Describes the way of calculating price elasticity of supply.
- Calculates point and arc price elasticity of supply using given data.
- Lists types of price elasticity of supply based on its coefficient value.
- Describes determinants of price elasticity of supply.
- Explains importance of price elasticity of supply.

A Guidelines to Explain the Subject Matters:

- The responsiveness of quantity supplied to the change in the price of concerned good, when other determinants remain constant is the price elasticity of supply.
- Accordingly, measure the percentage change in quantity supplied to a percentage change in price of the concerned good is done by with price elasticity of supply.
- Price elasticity of supply can be measured as below

$$\text{Price elasticity of supply} = \frac{\text{Percentage change in quantity supply}}{\text{Percentage changes of prices}}$$

$$\begin{aligned}
 \text{Price elasticity of supply (ES)} &= \frac{\Delta QS\%}{\Delta P\%} \\
 &= \frac{\frac{\Delta QS}{QS} \times 100}{\frac{\Delta P}{P} \times 100} \\
 &= \frac{\Delta QS}{QS} \times \frac{P}{\Delta P} \\
 \text{ES} &= \frac{\Delta QS}{\Delta P} \times \frac{P}{Q}
 \end{aligned}$$

Es = Price elasticity of supply

ΔQs = Change in quantity supplied

ΔP = Change in price

Example – There following are some of the information about price and quantity supplied details of a certain good

Price	Quantity supplied
5	100
10	500

- When price increases from Rs.5 to Rs.10. The price elasticity of supply

$$\begin{aligned}
 \text{Es} &= \frac{\Delta Q}{\Delta P} \times \frac{P}{Q_s} \\
 &= \frac{400}{5} \times \frac{5}{100} \\
 &= 4
 \end{aligned}$$

- The supply elasticity coefficient gets a positive value, because of the positive relationship exists between price and the quantity supplied. This situation would be occurred due to the positive slope of the supply curve.
- When measure the elasticity at a certain point at a supply curve then it is called the point price elasticity of supply.
- The point price elasticity of supply is also calculated using above formula.

$$E_s = \frac{\Delta Q_s}{\Delta P} \times \frac{P}{Q}$$

- Point price elasticity of supply is a theoretical concept.
- Point Price elasticity of supply is not suitable to measure the elasticity of a large change in price.
- Reason for this is when price increase or decrease by a same amount, obtained of two different elasticity coefficients more difference.
- It can be explained with the example below.
- According to above example, point price elasticity of supply is 4 when price increases from 5 to 10
- But, price elasticity when price decrease from Rs10 to Rs.5/-

$$\begin{aligned}
 E_s &= \frac{\Delta Q_s}{\Delta P} \times \frac{P}{Q_s} \\
 &= \frac{400}{5} \times \frac{10}{500} \\
 &= 1.6
 \end{aligned}$$

- When price increase or decrease by same amount obtained of two coefficients with a large difference is a weakness of the point price elasticity of supply.
- Due to this to measure the elasticity of supply with large differences of prices arc price elasticity is used.
- Arc price elasticity of supply can be measured as below

$$\text{Arc price elasticity of supply} = \frac{\Delta Q_s}{\Delta P} \times \frac{\frac{P_1 + P_2}{2}}{\frac{Q_1 + Q_2}{2}} = \frac{\Delta Q_s}{\Delta P} \times \frac{P_1 + P_2}{Q_1 + Q_2}$$

ΔQ_s = Change in quantity supplied

ΔP = Change in price

$\frac{P1 + P2}{2}$ = Average Price

$\frac{Q1 + Q2}{2}$ = Average Quantity

Example - Information about related to price and quantity supplied of a particular of good is given below.

Price	Quantity supplied
10	100
20	200

$$\begin{aligned} \text{Arc price elasticity of supply} &= \frac{100}{10} \times \frac{\frac{10 + 20}{2}}{\frac{100 + 200}{2}} \\ &= \frac{100}{10} \times \frac{15}{150} \\ &= 1 \end{aligned}$$

- There is a relationship between price elasticity of supply and the slope of the supply curve.
- The price elasticity of supply of any point of the supply curve can be measured using the price elasticity formula.

Elasticity of supply = $\frac{\Delta Q_s}{\Delta P} \times \frac{P}{Q_s}$
--

- In this formula $\Delta Q_s/\Delta P$ is the variance of the slope of the supply curve.
- If we mark the quantity supplied in vertical axis and price in horizontal axis slope of the curve is indicated by $\Delta Q_s/\Delta P$. However, as we draw the supply curve by, marking the price in vertical axis and quantity supply in horizontal axis slope of the supply curve is indicated by $\Delta P/\Delta Q_s$.

- Slope of the supply curve is indicated as $(\Delta P/\Delta Q_s)$ and as various of the slope of the supply curve is written as the first part of in elasticity formula it can also be written as

$$\text{Elasticity supply} = \frac{1}{\text{slope}} \times \frac{P}{Q_s}$$

- This also indicate the same elasticity formula mentioned above.

$$\text{Elasticity supply} = \frac{\Delta Q_s}{\Delta P} \times \frac{P}{Q_s}$$

- Price elasticity of supply can also be measured with supply equation also.

Example – Using the following supply equation calculate the price elasticity of supply at price Rs.10/-

$$Q_s = 100 + 4P$$

$$E_s = \frac{\Delta Q_s}{\Delta P} \times \frac{P}{Q_s}$$

- Number + 4 (such as **b**) of supply equation is the first term of the supply elasticity equation and it is equals to

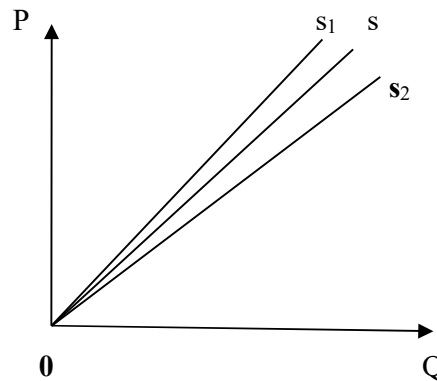
$$= \frac{\Delta Q_s}{\Delta P}$$

- Quantity supplied is 40 at price Rs.10

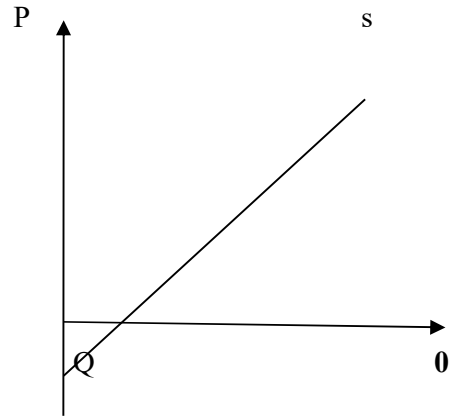
$$\begin{aligned} \text{elasticity supply} &= 4 \times \frac{10}{40} \\ &= 1 \end{aligned}$$

- The coefficient value of supply elasticity varies from zero (0) to infinity (α)

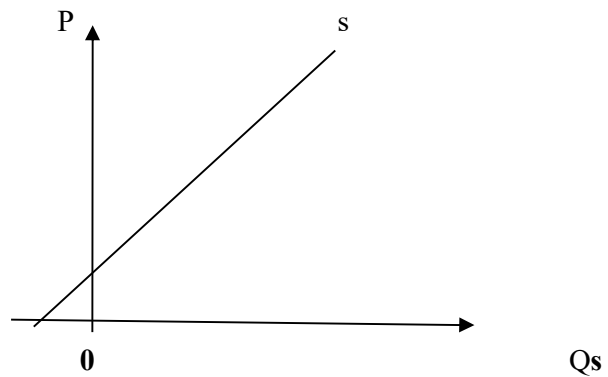
- We can indicate five types of supply elasticity according to the coefficient value of supply elasticity.
 1. Unity elastic supply
 2. Elasticity less than one
 3. Elasticity greater than one
 4. Perfectly elastic supply
 5. Perfectly inelastic supply
- If percentage change in price equals to the percentage change in quantity when other determinants remain constant it is known as unitary elastic supply.
- The coefficient value equal to one every supply curve which goes from the origin has price elasticity of supply coefficient equals to one.
- The reason for that is the ratio between price and quantity supplied of a supply, curve which begins from the origin being equals to one.
- Below graphs shows the unitary elastic supply curves.



- According to the above graph, the value of $\Delta P/\Delta Q_s$ in the supply curves of S₁, S₂, S₃ always equals to P/Qs. Because of this elasticity always equals to one.
- When other factor remain constant if the percentage change in quantity supplied of the concerned good is less than the percentage change in price it is called inelastic supply. (less than one elasticity of supply)
- At a situation like that the value of coefficient is always less than one and of in any curve which more upwards through the horizontal axis supply elasticity of supply will be equals to one.

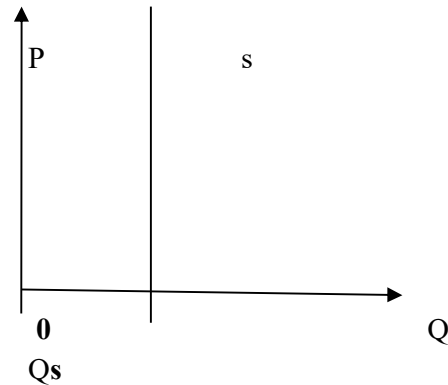


- In the above graph, the value of price elasticity of supply is less than one
- When moving along the supply curve upwards the coefficient value of price elasticity of supply which is less than one, gradually increases till it is closer to one.
- The reason for that is the increasing ratio between price and quantity supplied.
- When other factors remain constant if the percentage change in quantity supplied is greater than the percentage change in price it is the supply elasticity greater than one.
- Here, the value of coefficient is greater than one.
- In a supply curve which moves upwards through the vertical axis the value of coefficient is always greater than one.
- Following graph shows the price elasticity which is greater than one

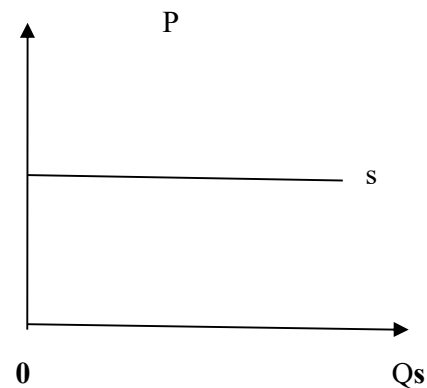


- The value of coefficient of supply curve S is more than one in the above graph

- Decrease in the ratio between price and quantity supply is the reason for that.
- When other factor remain constant if there is no any change in quantity supplied for the change in price it is called perfectly inelastic supply
- The value of coefficient is zero.
- The supply curve is parallel to the vertical axis



- When other factors remain constant if the quantity supplied changed by a large proportion with small change in price it is called perfectly elastic supply.
- Here the value of coefficient is infinity,
- The supply curve is parallel to the horizontal axis.



- There are several factors that determine the supply elasticity.
 1. Factor mobility of production
 2. Nature of the good
 3. Availability of storage facilities
 4. Time that take to (Change) adjust the supply

- Moving that factors of production from one production process to another production process is called factors mobility of production.
- In the way, the resources shift from one production to another easily and also when price increase supply increase during a short period of time.
- Accordingly, when there is more factors mobility elasticity of supply is elastic supply.
- If the factors have immobility supply elasticity is inelastic supply.
- If the production factors have more substitution possibility to substitute the factors which use for a certain good to another product, that product has an elastic supply.
- Ex – the resources which for produce tables can be also use for production of beds because of this when increase the price of bed the resources use for table can be use for beds and bed supply will be increased
- If can be follow on more storage the rejoices that good has elasticity supply
- But if there is lack of storage facilities that goods have inelastic supply.
- If time is that good has elastic supply
- If the time is short run that good has inelastic supply
- The price elasticity of supply is very important for economy analyses
- It is very important awareness the supply elasticity by consumers, producers and economy policy makes.
- There are some opportunities which important to people practically
 - Can be predicated the responsiveness for the consumer expenditure and producer revenue
 - Can be determined a price to maximize the producer revenue
 - Can be determine the monopoly power which has a business firm
 - can be identify the substitute and complementary goods for a certain good
 - Can be identify the factor mobility

Competency Level 2.10 : Analysis the market.

Number of Periods : **06**

Expected Learning Outcomes :

- Defines market.
- Names the functions of market.
- Explains the goods and services market with examples.
- Comparatively analyses the difference between goods market and factor market.

Instructions for Lesson Planning :

- Inquire from the students about the market which they know.
- Ask the students, what exchange is in the markets.
- Explain the main characteristics of the market.
- Define the market.
- Supply points for types of markets.
- Group the students and provide necessary instructions to do the task.

Propose Instructions for Learning :

- Pay attention to the market assigned to your group from among the following markets.
 - Foot wear market
 - Market for raw materials to produce foot wear
- Study the incident which you have got properly.
- Consolidate the information below by studying the market.
 - Buyers and sellers
 - Nature of demand
 - Way of determinant the demand
- Explain how the market given to you interacts with other markets.
- Be prepared to present your findings to the class creatively.

Incident

The foot wear firm named Seedevis imports input from a foreign country to produce goods. Several persons have the opportunity to work in that firm according to a paper advertisement of the firm. He has purchased new machines and used new technology because of that the shoe production has increased.

Later he has opened shoe shops in several provinces of the Island. The firm has got the efficiency to supply goods even on a phone call.

After getting information from friends they also bought shoes. Because of the increase in the demand production also increased and more job opportunities to others were provided.

A Guidelines to Explain the Subject Matters:

- The market which exchanges the goods and services is defined as a goods and services market.
- The market which exchanges the production factors as land, labour, capital is defined as the factor market.
- The consumers demand goods and services, and producers supply goods and services.
- The producers (firms) demand the production factors and consumers supply the production factors.
- The demand for goods and services was created because of the marginal utility of the goods.
- The goods and services have a direct demand.
- The production factors have an indirect demand.

- The factor market and goods and services market can be analyzed as follows :

Goods and services market	Factor services market
<ul style="list-style-type: none"> • Exchange of consumer goods and services. • Household demand for the goods and services. • Firms supply the goods and services. • Goods and services have a direct demand. 	<ul style="list-style-type: none"> • Exchange the factors. • Firms demand factor services. • Households supply factor services. • Factor services have an indirect demand.

Competency Level 2.11 : Examines how market equilibrium is determined.

Number of Periods : 06

Expected Learning Outcomes :

- Defines market equilibrium.
- Names alternate methods by which market equilibrium can be shown.
- Presents market equilibrium using on demand and supply schedules.
- Presents market equilibrium using on demand and supply curves.
- Presents market equilibrium using on demand and supply equations.
- Defines concepts related to market equilibrium and presents them with the use of graphs.

Instructions for Lesson Planning :

- Present the following conversation to student that between a merchant and consumer who went to market to buy rice.

Consumer : Mudalali, How much is one kilogram of samaba?

Owner of boutique : Rs. 90, Sir

Consumer : I have bought 10kgs at Rs. 80/- last week

Owner of boutique : Sir, Rice is expensive these days.

Consumer : At what price would you give me, if I buy 25kg?

Owner of boutique : I will give you 1kg at Rs. 85/- because you are a good customer of our.

- Inquire the ideas of student about the conversation.
- Conduct a discussion highlighting the following factors.
- Consumer demand various quantity in various prices and supplier supply various quantity in various prices.
- The quantity and price which agree both purchasers and suppliers is the equilibrium price and quantity.
- Divide the students into group and provide the proposed learning instructions to do the task.7777

Proposed Instructions for Learning:

- Pay attention to the demand and supply equations assigned to your group;
 - $Q_d = 100 - 2P$ and $Q_s = -60 + 3P$
 - $Q_d = 40 - 2P$ and $Q_s = -10 + 3P$
- Construct demand and supply schedules with same prices by using the demand and supply equations given to you.
- Using demand and supply schedules constructed by you Identify the price and quantity where quantity demand equals to quantity supply in demand and supply in your schedules
- Draw the supply and demand curves in a same graph by using schedule demand and supply developed by you.
- Present your ideas about the situation where supply and demand curves intersect each other.

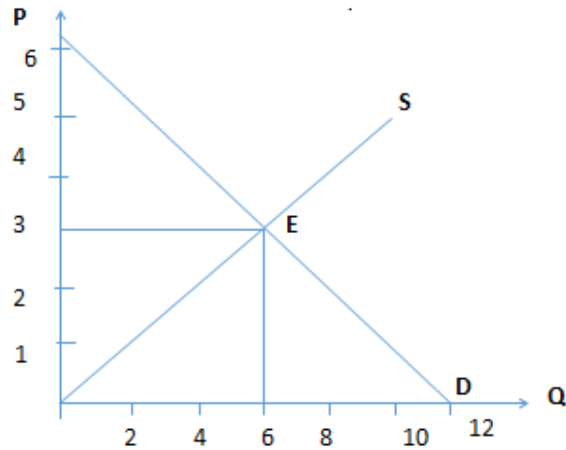
A Guidelines to Explain the Subject Matters:

- Market equilibrium is the situation where the expectations of purchasers and suppliers at a competitive market equal each other.
- At that situation, there is no excess demand or excess supply as quantity demanded equal to quantity supplied and there in no excess demand price or excess supply price as purchasers' expected price equals to supplier expected price.
- The conditions of market equilibrium can be mentioned as follows.
 - Expected demand price should be equal to expected supply price.
 - Expected quantity demanded should be equal to expected quantity supplied.
 - Excess demand and excess supply must be zero.
 - Expected demand price and expected supply price should be zero.
 - Consumer expenditure and producer revenue should be equal to each other.
- Market equilibrium is not an actual market situation but an expected situation.

- Market equilibrium is an index which shows the market direction.
- When the market deviated from the market equilibrium it will again closer to the equilibrium situation automatically.
- The alternative methods which can be shown the market equilibrium are given below.
 1. By schedules of demand and supply
 2. By curves of demand and supply
 3. By equations of demand and supply
- A market equilibrium schedule can be shown as below.

Price	Quantity demanded	Quantity supplied
0	12	0
1	10	2
2	8	4
3	6	6
4	4	8
5	2	10
6	0	12

- According to above example , at price Rs3.00 as both quantity demand and quantity supply equals to 6 it does not show any excess demand or excess supply.
- Accordingly excess demand and excess supply equals to zero.
- Using above data the market equilibrium can be presented in a graph as below.



- Price is Rs.3.00 at the situation where demand equals supply. Quantity demanded is 6. It is the market equilibrium situation as there is no excess demand or excess supply.
- Market equilibrium can be presented with the use of demand and supply equations as below.
- According to above demand and supply schedules demand and supply equations can be constructed as follows.

Demand equation $Q_d = a - bp$

Supply equation $Q_s = a + bp$

a = The quantity supplied or quantity demanded at price zero (Intercept)

$$b = \frac{\Delta Q}{\Delta P}$$

P = **Price**

$$a = 12$$

$$b = \frac{\Delta Q}{\Delta P} = \frac{2}{1} = 2$$

$$\therefore Q_d = 12 - 2p$$

$$a = 0$$

$$b = \frac{\Delta Q}{\Delta P} = \frac{2}{1} = 2$$

$$\therefore Q_s = 2p$$

At equilibrium $Q_d = Q_s$

$$12 - 2p = 2p$$

$$12 = 4p$$

$$\frac{12}{4} = p$$

$$3 = p \quad (\text{Equilibrium price})$$

- By substituting the value of P to any of the demand or supply equation quantity can be estimated as follows

$$\begin{array}{ll} Q_s = 2P & Q_d = 12 - 2p \\ = 2 \times 3 & = 12 - 2 \times 3 \\ = 6 & = 12 - 6 \\ & = 6 \end{array}$$

- The amount of quantity demanded which exceeds the amount of quantity supplied at a certain price is called excess demand.

$$\text{Excess demand} = (\text{Quantity demand} - \text{Quantity supplied})$$

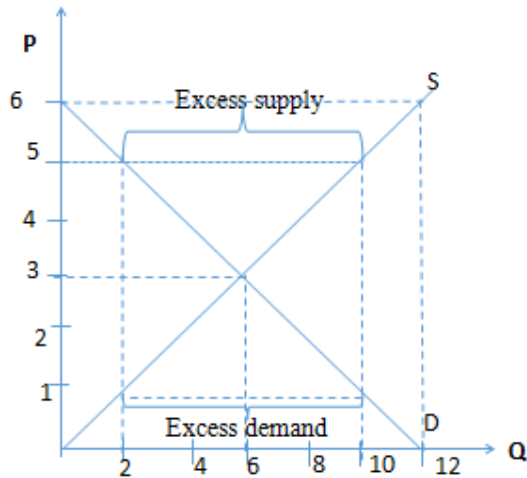
- The amount of quantity supplied which exceeds the amount of quantity demanded at a certain price is called excess supply.

$$\text{Excess supply} = (\text{Quantity supplied} - \text{Quantity demanded})$$

- The quantities of excess demand and excess supply can be shown by a schedule as below.

Price	Quantity of demand	Quantity of supply	Excess Demand	Excess supply
0	12	0	12	-12
1	10	2	8	-8
2	8	4	4	-4
3	6	6	0	0
4	4	8	-4	4
5	2	10	-8	8
6	0	12	-12	12

- Excess demand and excess supply can be shown by a graph as below .



Example 1 – At price one quantity demand is 10 unit

An Price one quantity supplied is 2 unit

$$\begin{aligned} \text{Amount of excess demand} &= 10 - 2 \\ &= \underline{8} \end{aligned}$$

Example2 – At price Rs.5 quantity demand is 2 units

At price Rs.5 quantity supplied is 10 units

$$\begin{aligned} \text{Amount of excess supply} &= 10 - 2 \\ &= \underline{8} \end{aligned}$$

- Excess demand price is that the supply price greater than the demand price at a certain quantity

$$\text{Excess supply price} = \text{demand price} - \text{supply price}$$

- Excess supply price is that the supply price greater than the demand price at a certain quantity

$$\text{Excess supply price} = \text{supply price} - \text{demand price}$$

- Excess demand price and excess supply price can be presented by the following schedule.

Price	Demand Price	Supply price	Excess demand price	Excess supply price	
0	6	0	6	-6	
2	5	1	4	-4	
4	4	2	2	-2	
6	3	3	0	0	Equilibrium
8	2	4	-2	2	
10	1	5	-4	4	
12	0	6	-6	6	

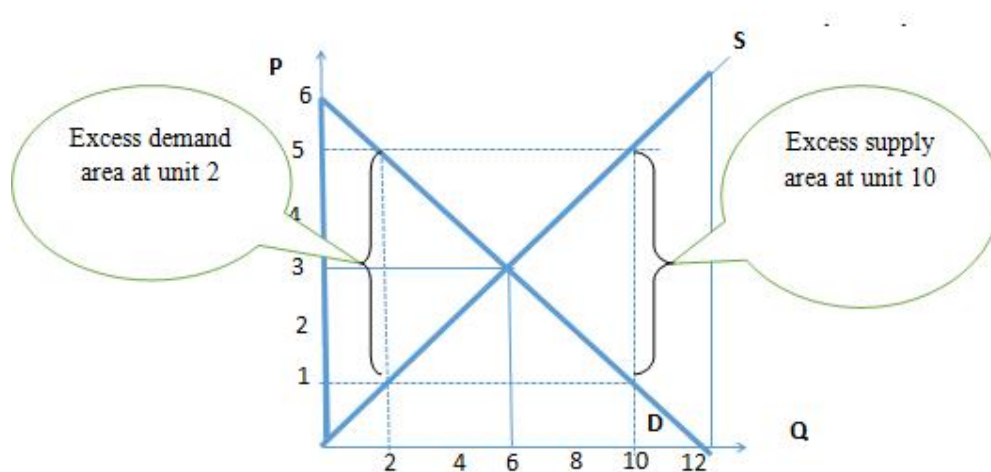
Example – Excess demand price at unit 2 = Demand price- Supply price

$$\text{Excess demand price} = 5 - 1 = 4$$

$$\text{Excess supply price} = \text{Supply price} - \text{Demand price}$$

$$\text{At 10 units} = 5 - 1 = 4$$

- The situation that excess demand price and excess supply price is zero it is the equilibrium situation.
- Excess demand price and excess supply price can be presented by a graph.



- Excess demand price and excess supply price can also be explained with equations.

$$Q_d = 12 - 2p \text{ demand equation}$$

$$Q_s = 2p \text{ supply equation}$$

- Excess demand price and excess supply price can be explain by equation also.

$$\text{Excess demand equation} = \text{demand equation} - \text{supply equation}$$

$$= 12 - 2p - (2p)$$

$$= 12 - 2p - 2p$$

$$\text{Excess demand equation} = 12 - 4p$$

$$\text{Excess demand equation} = \text{demand equation} - \text{supply equation}$$

$$= 12 - (12p - 2p)$$

$$= 12 - 12p + 2p$$

$$\text{Excess demand equation} = -12 + 4p$$

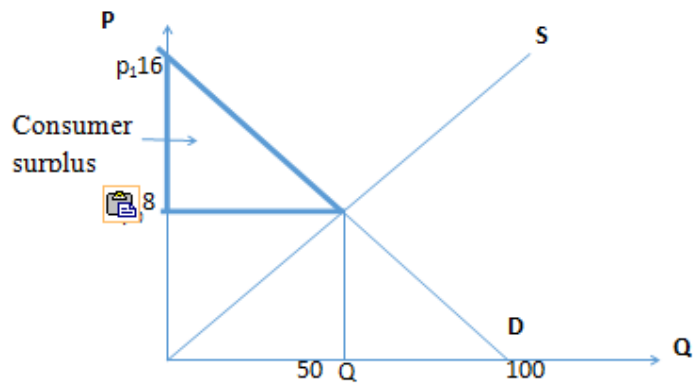
- According to the excess demand and access supply equations excess demand and excess supply can be calculated.

Example – In price Rs.3/-

$$\text{Excess quantity demanded} = 12 - 4p = 12 - 4 \times 3$$

$$= 12 - 12 = 0$$

- The difference between the price and that the consumer is willing to pay and the price that the consumer actually pays for the quantity of goods exchanged at the market is called consumer surplus.
- Market equilibrium price is the price which consumer pays for goods and it not the price consumer is willing to pay. The price that consumer is willing to pay may be higher than that price. When they expected to pay a higher price demand and supply determine a suitable price and remains as a equilibrium price. Because of it there may creates a benefit situation for consumers.
- Consumer surplus can be explained by a graph.



- Consumer surplus can be calculated as follows.

$$\text{Consumer surplus} = \frac{\left\{ \begin{array}{l} \text{maximum} \\ \text{demand price} \end{array} - \begin{array}{l} \text{Equilibrium} \\ \text{price} \end{array} \right\} \times \begin{array}{l} \text{Equilibrium} \\ \text{Quantity} \end{array}}{2}$$

$$= \frac{(16 - 8) \times 50}{2}$$

$$= \frac{400}{2}$$

$$= 200$$

- Maximum demand price can be calculated using an equation as follows.

$$Qd = a - bp \quad a = 100 \quad b = \frac{\Delta Q}{\Delta p} \quad b = \frac{50}{8}$$

$$Qd = 100 - \frac{50}{8} p$$

$$0 = 100 - \frac{50}{8} p$$

$$\frac{50}{8} p = 100$$

$$\frac{25p}{4} = 100$$

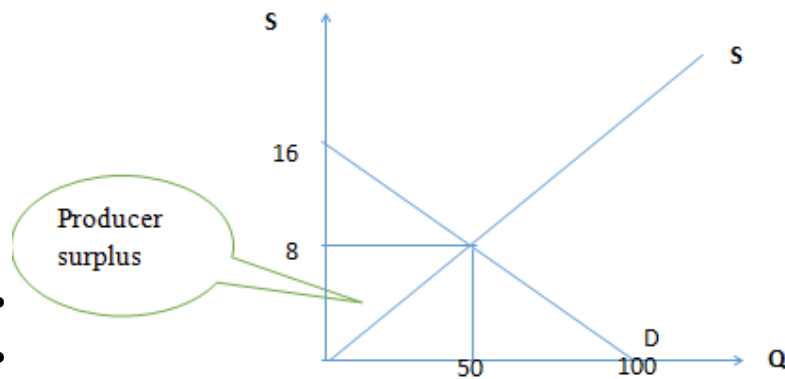
$$25p = 100 \times 4$$

$$25p = 400$$

$$p = \frac{400}{25}$$

$$p = 16 //$$

- The difference between the minimum price that the supplier are willing to receive and the price they actually receive is known as producer surplus.
- When deduct the total variable cost from total revenue of the producer the balance received is the producer surplus.
- Producer surplus can be explained by a graph as below.



- Producer surplus can be calculated as follow

$$\text{Producer surplus} = \frac{\left\{ \begin{array}{l} \text{Equilibrium} \\ \text{price} \end{array} - \begin{array}{l} \text{Minimum} \\ \text{supply price} \end{array} \right\} \times \text{Equilibrium} \\ \text{Quantity}}{2}$$

- According to above example producer surplus can be measured as follows.

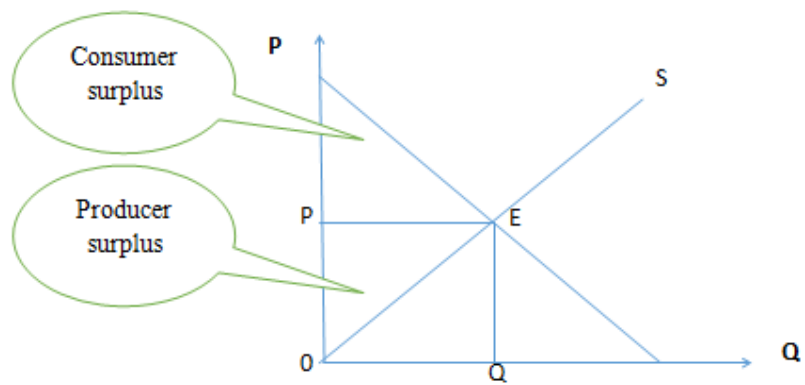
$$= \frac{(8 - 0) \times 50}{2}$$

$$= \frac{400}{2}$$
$$= 200$$

- The buyers and sellers gained profits through the equilibrium exchange. The gain achieved by both parties is called economic surplus.

Economic surplus = Consumer surplus + Producer surplus

- Economic surplus can be shown by a graph.



Competency Level 2.12 : Analyses change in market equilibrium.

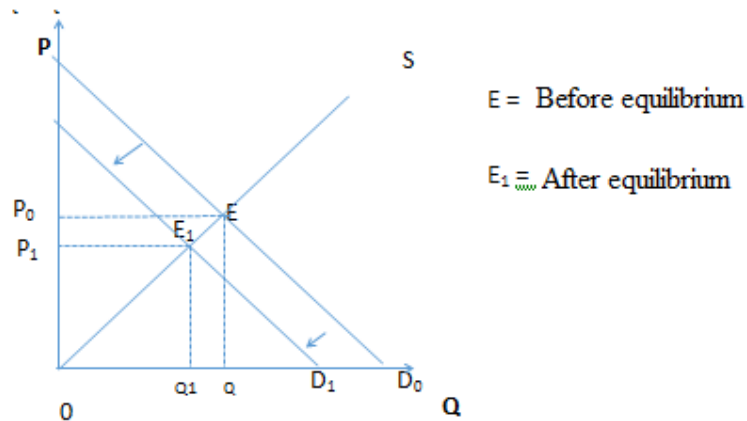
Number of Periods : 06

Expected Learning Outcomes :

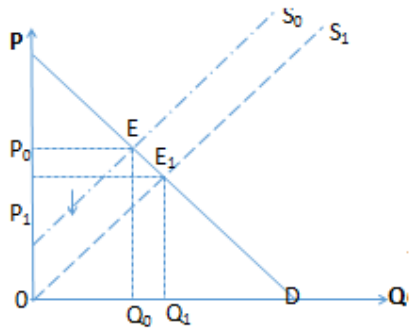
- Explains change in market equilibrium.
- Analyses change in market equilibrium with demand and supply schedules and equations.

A Guidelines to Explain the Subject Matters:

- Market equilibrium is changed due to a shift of the demand or supply curve to the left or right due to the influence of other factors.
- Changes of equilibrium can be illustrated as follows.
 - Change in demand curve when supply curve remain constant.
 - Change in supply curve when demand curve remains constant.
 - Change in both supply and demand curves.
- Change in equilibrium with change in demand while supply is constant can be illustrated through a graph as follows.

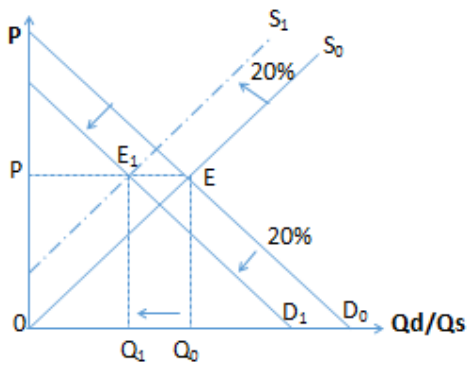


- Change in equilibrium with change in supply while supply is constant can be illustrated through graphical presentation.



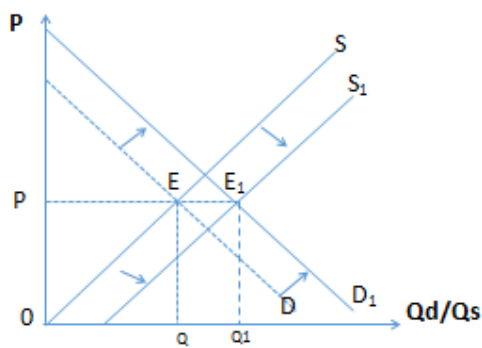
E = Before equilibrium
 E₁ = After equilibrium

- Change in equilibrium with change in both demand and supply can be illustrated by a graph as follows.



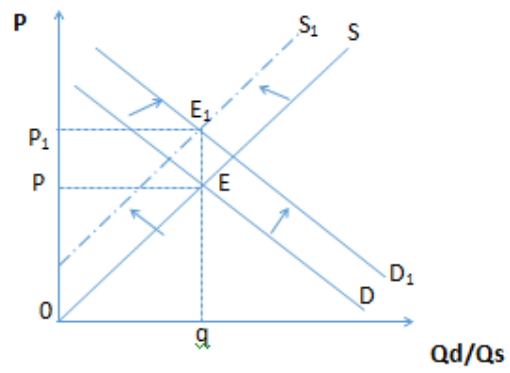
E = Before equilibrium
 E₁ = After equilibrium

- According to above graph, equilibrium price does not change because demand and supply change in same quantity.



E = Before equilibrium
 E₁ = After equilibrium

- The equilibrium quantity would not be change when decrease the supply in the same quantity in demand can be illustrated as following graph.



E = Before equilibrium

E₁ = After equilibrium

Competency 3 :- Investigates the government intervention to the market.

Competency Level 3.1 :- Analyses the ways the government intervenes to a market.

Number of Periods: 02

Expected Learnings Outcomes :-

- Shows the ways of government intervention to a market.

A Guidelines to Explain the Subject Matters:

- The market equilibrium determined by the demand and supply forces, perform an important duty within the society in producing and distributing goods and services.
- However when looking at market equilibrium from a social and political point of view some believe market equilibrium is as unfavourable to the society.
- Because of this reason the government intervenes to the market in various ways.
- The main ways of government intervention are as follows.
 - Imposing of taxes
 - Providing of subsidies
 - Price control
 - Price stabilization
- One of the most popular ways of government intervention into a market economy is the imposing of taxes on producers and consumers.
- Government impose taxes with different interventions. There are two forms of imposing taxes. These two forms are, imposing a certain numbers of rupees over a unit of goods produced or consumed and imposing a particular percentage of the value of the goods as a tax.
- Any form of the above mentioned tax will increase the cost of production of producers and it will shift the supply curve to the left.

- In this way as the demand and supply situation changes due to the imposition of taxes the market equilibrium is determined through demand and supply forces also changed.
- Similar to imposing of taxes government also provide subsidies to consumers and producers.
- As demand and supply changes due to the provision of subsidies the market equilibrium determined by demand and supply forces also changed.
- Other than taxes and subsidies, government change equilibrium values through price policies.
- Today it is common for most governments to introduce controlled prices under price policies.
- In this government intervenes to the price determination through laws and market mechanism is neutralized then.
- Price controlled policies implemented through laws are of two types
 - Deciding of maximum price
 - Deciding of minimum price
- When prices of goods fluctuate frequently price instabilities are occurred. Aiming to prevent those price instabilities government implement various price stabilization policies.

Competency Level 3.2 :- Analyses government intervention in the free market through a unit tax.

Number of periods :- 08

Expected learning outcomes:

- Names the ways of imposing taxes on products.
- Defines a proportional tax.
- Defines a unit tax.
- Shows the effect on supply curve when imposing a unit tax over a supplier.
- Shows impact of a unit tax on market equilibrium when imposing a unit tax over a supplier through demand and supply schedule.
- Shows impact of a unit tax on market equilibrium when imposing a unit tax over a supplier through demand and supply curve.
- Presents impact of unit tax on market equilibrium when imposing a unit tax over a supplier through demand and supply equations.
- Analyses welfare effect of a unit tax.
- Explains imposing of a tax over consumers.

Instructions for Lesson Planning:

- The government decided to impose Rs.5 tax for 1Kg. of imported potatoes to protect domestic potato suppliers.
- Ask the ideas of students about the statement.
- Conduct a discussion highlighting the following facts.
- Imposing taxes on suppliers and consumers can be considered as a common situation where government intervenes to the market activities.
- Government imposes taxes with various objectives.
 - There are two forms of taxes imposed on goods and services.
 - Proportional tax or ad-valorem tax
 - Specific tax or unit tax
- Group the students in a proper way and , provide instructions to do the activity

Proposed Instructions for Learning:

- Pay attention to the pair of demand and supply equations given to you among the following equations.
- $Q_d = 100 - 2P$ and $Q_s = -60 + 3P$
- $Q_d = 40 - 5P$ and $Q_s = -10 + 5P$
- Construct demand and supply schedules with same prices by using the equations which you have received.
- Create demand and supply curves in a graph according to your schedules.
- Calculate the market equilibrium price and quantity, consumer surplus and producer surplus.
- Assume that the government charge Rs 2.00 tax from each unit sells.
- Using the before prices, construct the new supply schedule after tax according to new supply equation of $Q_{st} = a + b(P - 2)$.
- Create the new supply curve in the same graph according to the new supply schedule.
- Calculate the new equilibrium price, quantity, producer surplus, and consumer surplus after the tax.
- Compare the market situations before tax and after.

A Guidelines to Explain the Subject Matters:

- Imposing taxes on consumers and producers can be considered as a common situation of government intervention to the market process.
- There are two forms of the taxes imposed on goods and services.
 - Proportional tax or ad-valorem tax
 - Specific tax or unit tax
- Imposing a particular percentage of a tax based on the value of product produced or consumed is known as ad-valorem tax.
Example: 2% tax on the value of 1 Kg. of sugar.

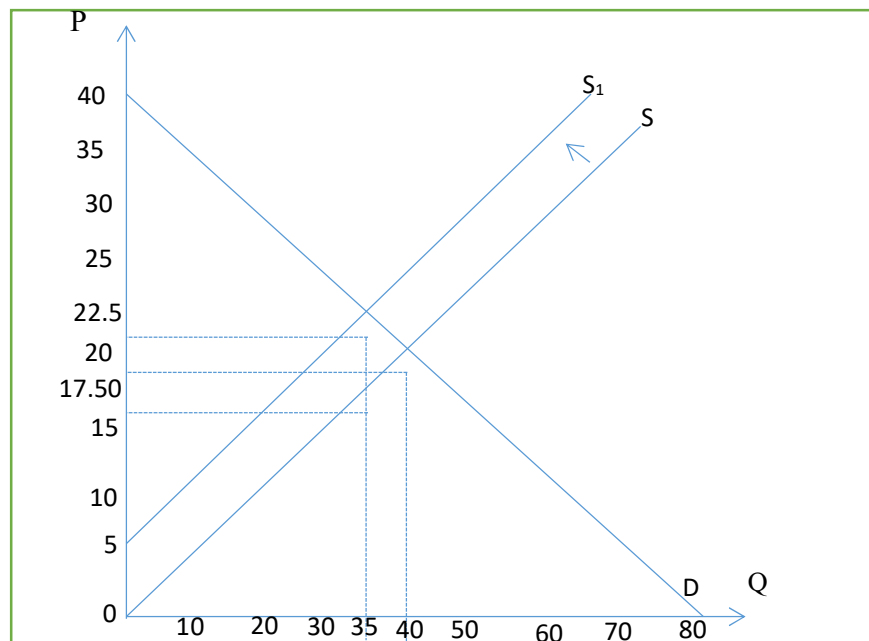
- Imposing taxes on a unit of a product produced or consumed is known as a unit tax or as a specific tax.
- Example.
 - Imposing of Rs. 10 tax per one Kilogram of sugar.
 - Imposing of Rs. 2 tax per loaf of bread.
 - Imposing of Rs 3 per one meter of cloths.
- When imposing taxes on supplier, the cost of production increases.
- As a result supply decreases and the supply curve shift to left side by the same amount of tax.
- After implementing a unit tax , the influence on market equilibrium can be shown with the schedule, graph and equations.
- When imposing a unit tax over a supplier it can be adjusted to the supply schedule, supply curve and supply equation as below.
- Following is a demand and supply schedule of a certain goods at a competitive market.

Price (Rs.)	Quantity supplied
0	0
5	10
10	20
15	30
20	40
25	50
30	60
35	70
40	80

Think that the government imposes a Rs 5 unit tax for this good. Because of this new market supply schedule can be shown as follows.

Price	Unit tax	Price after tax	Quantity supplied
0	5	5	0
5	5	10	10
10	5	15	20
15	5	20	30
20	5	25	40
25	5	30	50
30	5	35	60
35	5	40	70
40	5	45	80

- Above schedule shows decrease in supply after the unit tax as cost of production increases with the unit tax.
- Information before and after unit tax can be shown by a graph as below.



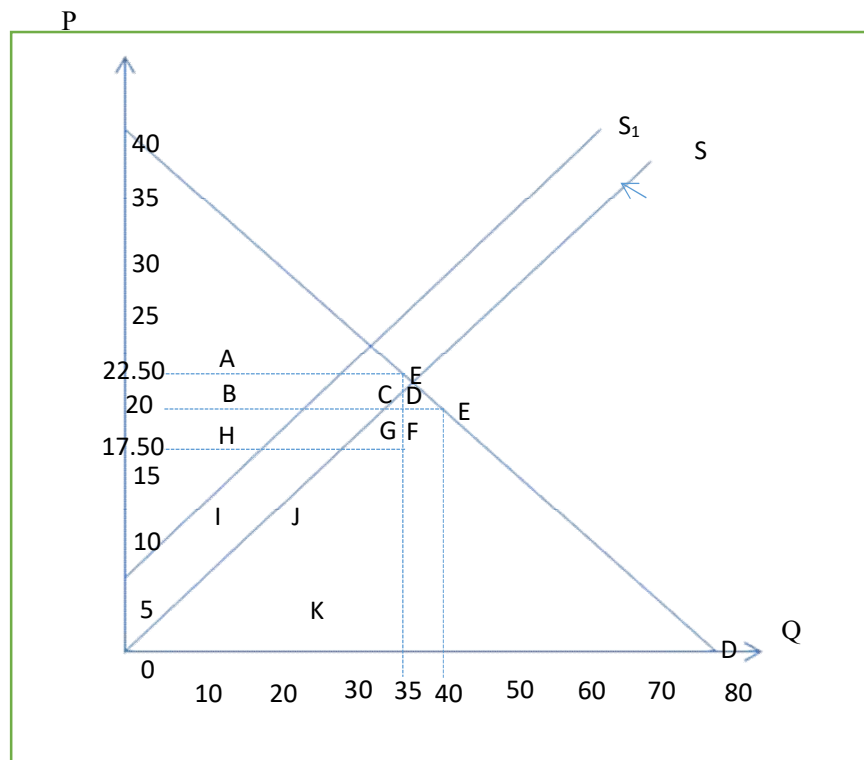
- Because of the Rs5 tax imposed over the producer the supply curve shifted to the left side and equilibrium changed accordingly .

- Before tax,
Equilibrium price =Rs 20
Equilibrium Quantity = 40 units

- After tax

Equilibrium price =Rs 22.50
Equilibrium Quantity = 35 units

- Welfare effect also occurs in addition to the change in equilibrium after the tax.
- The welfare effect can be identified by the following graph.



before tax,

$$\text{Consumer surplus} = A + B + C + D$$

Consumer surplus = $\frac{(\text{Maximum demand price} - \text{equilibrium price}) \times \text{equilibrium quantity}}{2}$

$$\text{Consumer surplus} = \frac{(40-20) \times 40}{2}$$

$$= 400 / =$$

$$\text{Producer surplus} = H + G + F + I + J$$

$$= \frac{(20-0) \times 40}{2}$$

$$= 400 / =$$

$$\text{Economic surplus} = -(A + B + C + D) + H + G + F + I + J$$

$$= 400 + 400$$

$$= 800 / -$$

After tax

$$\text{Consumer surplus} = A$$

$$= \frac{(40-22.50) \times 35}{2}$$

$$= 306.25$$

$$\text{Producer surplus} = I + J$$

$$= \frac{(17.50-0) \times 35}{2}$$

$$= 306.25 //$$

$$\text{Economic surplus} = (A) + (I + J)$$

$$= 306.25 + 306.25$$

$$= 612.50 //$$

(iii) Loss of consumer surplus due to the tax = $(A + B + C + D) - A$

$$= B + C + D$$

$$= 400 - 306.25$$

$$= 93.75 //$$

Loss of producer surplus due to the tax = $(H + G + F + I + J) - (I + J)$

$$= (H + G + F)$$

$$= 400 - 306.25$$

$$= 93.75 //$$

$$- B + C + D + H + G + F$$

$$- 93.75 + 93.75$$

$$= 187.50 //$$

(ii) Loss of economic surplus due to the tax = Before tax economic surplus –
(After tax economic surplus)

$$= 800 - 612.50$$

$$= 187.50 //$$

(iv) Government revenue = $B + C + H + G$

$$= \text{Amount of unit tax} \times \text{new equilibrium quantity}$$

$$= 5 \times 35$$

$$= 175 //$$

(v) Tax burden of the consumer = Equilibrium price before tax - Equilibrium price after tax

$$= 20 - 22.50$$

$$= 2.50$$

Tax burden for consumer = $B + C$

$$= 2.50 \times 35$$

$$= 87.50$$

(vi) Tax burden for producer $= 20 - 17.50$
 $= 2.50/=$

Producer tax burden $= H + G$
 $= 2.50 \times 35$
 $= \text{Rs. } 87.50 /=$

(vii) Both producer's and consumer's tax burden $= B + C + H + G$
 $= 87.50 + 87.50$
 $= \text{Rs. } 175 /=$

- The sum of total tax burden of both consumer and producer is equal to government tax revenue)
- Dead weight loss is the Rs. 12.50
- (viii) Dead weight loss is equal to area of D+F
- Dead weight loss = Loss of the economic surplus - Government revenue

$$= B+C+H+G-(B+C+D) +(H+G+F)$$

$$= 175 - 93.75 + 93.75$$

$$= 175 - 187.50$$

$$= 12.50/=$$

- Economic effects of imposing a unit tax can also be measured by equations. Following above example and supply equations before tax are as follows.

$$Q_d = 80 - 2p$$

$$Q_s = 0 + 2p$$

- Therefore, equilibrium before tax

$$Q_d = Q_s$$

$$80 - 2p = 0 + 2P$$

$$80 = 4P$$

$$20 = P$$

p = 20 after substituting the price for Q_s equation

$$80 - 2 \times 20$$

$$= 40$$

Equilibrium quantity = 40 units

- Equilibrium price = Rs20
- Imposing taxes for producers is a cost for them and it can be indicated as below.

$$Q_s = 0 + 2(p - t)$$

$$Q_s = 2(p - 5)$$

$$Q_s = 2p - 10$$

$$Q_s = -10 + 2p$$

- Equilibrium after tax

$$Q_d = Q_s$$

$$80 - 2p = -10 + 2p$$

$$90 = 4p$$

$$22.50 = p$$

$$p = 22.50,$$

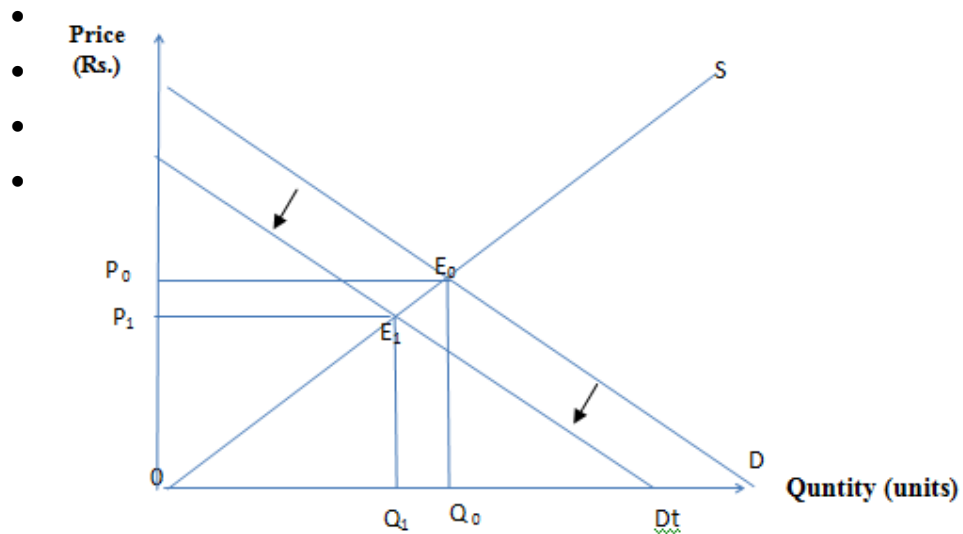
$$-10 + 2(22.50)$$

$$= 35$$

- Equilibrium price after tax, = 22.50
- Equilibrium quantity after tax, = **35 units**

- Other economic effects can also be presented by demand and supply equations.
- Imposing a unit tax over consumers means charging of a certain amount of rupees per unit of goods at a situation of purchasing goods by the consumer.
- Example : Sales tax, VAT

- At a situation of this as the tax is charged at the point of purchasing the goods, the total amount of tax is legally paid by the consumer.
- If Rs. 10 sales tax is charged over one unit of oranges, at each situations of purchasing oranges Rs.10 tax should be paid to the government.
- When imposing a unit tax over a consumer it does not have any effect over the supply curve.
- However, as the price that should be paid by the consumer increases after the tax the price willing to be paid by the consumer decreases for the units they purchased. Therefore, demand curve shifts to the left at the same prices existed.
- Following diagram shows change in equilibrium when a unit tax is imposed over a consumer.



- According to above diagram equilibrium before the unit tax imposed over consumer is shown by the point E0. At that point equilibrium price is P0 and equilibrium quantity is Q0. New equilibrium after the unit tax imposed over the consumer is shown by the point E1. At that point equilibrium price is P1 and equilibrium quantity is Q1.

Competency Level 3.3 :- Analyses the distribution of incidence of tax after the unit tax is imposed on supplier.

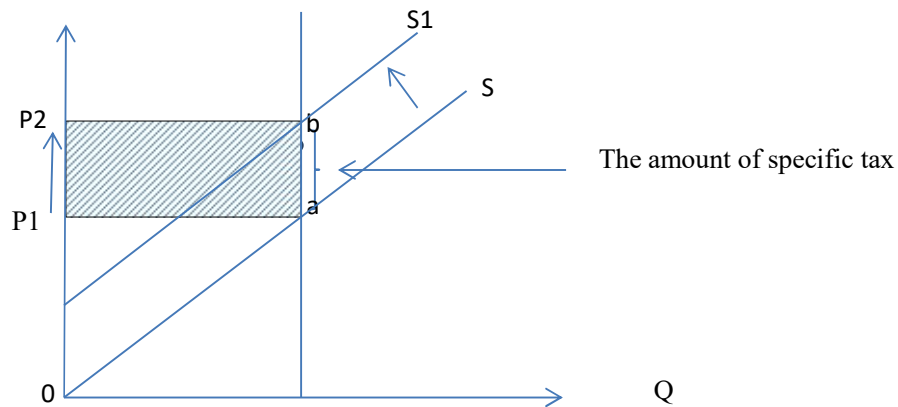
Number of periods :- 04

Expected learning outcomes:

- Defines incidence of tax.
- Describes the distribution of incidence of tax between consumer and producer based on the type of price elasticity of demand and supply.

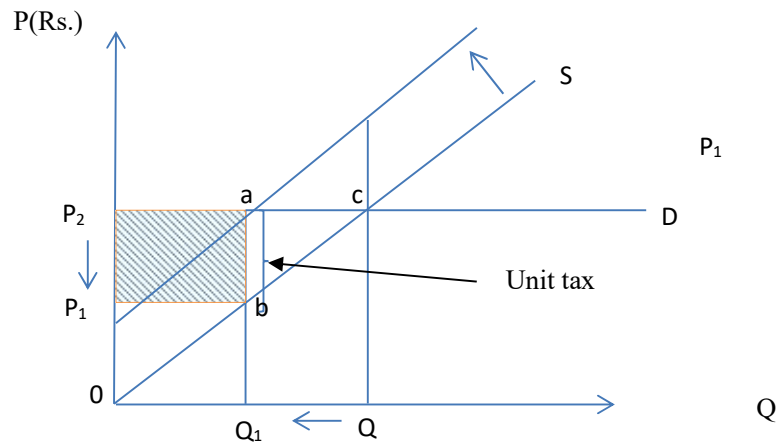
A Guidelines to Explain the Subject Matters:

- When imposing a tax over a producer the main factor which affects tax incidence is the demand and supply elasticity.
- Tax incidence at various situations of demand elasticity can be shown by the graphs below.
- Situation of perfectly inelastic demand:-



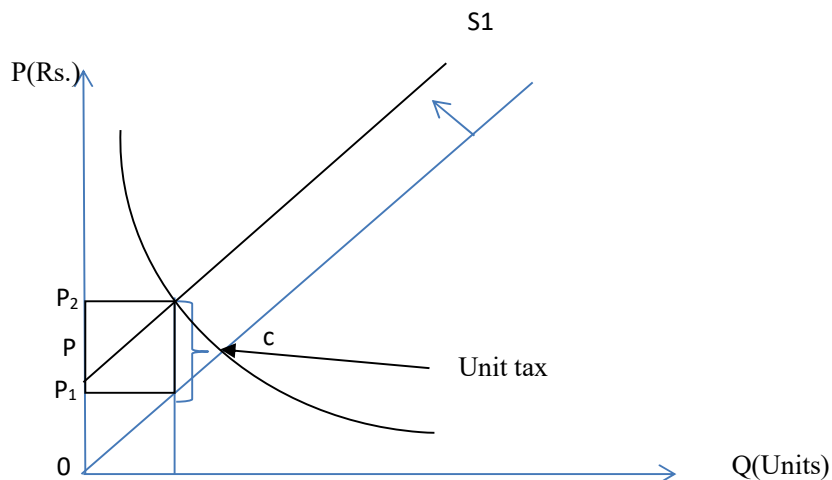
- According to the above graph supply curve before tax is depicted by the curve S and supply curve after tax is depicted by the curve S1.
- Equilibrium before tax is depicted by the point **a** and equilibrium the after tax is depicted by point **b**.
- Amount of unit tax is shown by the gap of a-b and increase in equilibrium price is also shown by the same gap. Which means $a - b = P1 - P2$
- At a situation of perfectly inelastic demand increase in equilibrium price by the same amount of unit tax shows that the total burden of tax should be borne by the consumer.
- The shaded area of A shows the total tax burden of the consumer.

Situation of perfectly elastic demand:-

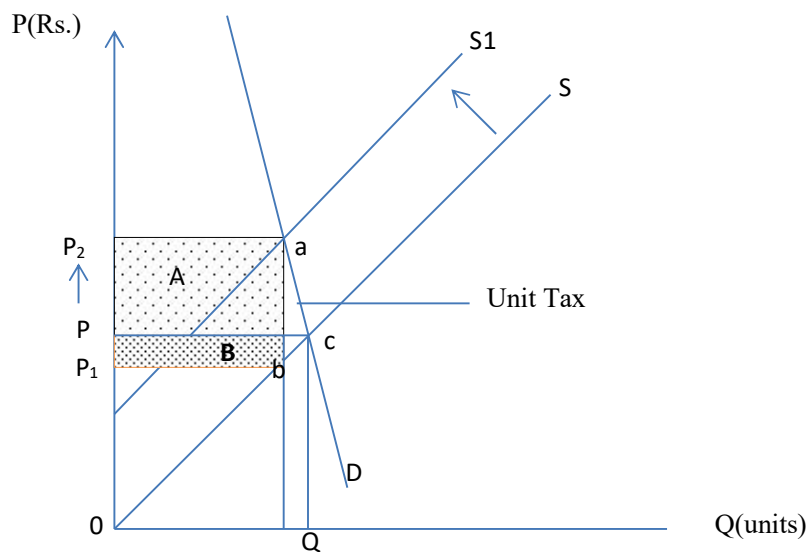


- Due to unit tax supply curve shifted from S to S₁
- Equilibrium before tax is shown by the point C and equilibrium after the tax is shown by the point a.
- Due to the imposition of tax equilibrium the quantity reduced from Q to Q₁ and there is no change in the equilibrium price.
- Price before the tax is same as the price after tax which is P₂.
- This means there is no change in the price paid by the consumer.
- Due to this the price received by the producer has decreased by the amount of unit tax(a-b) from P₂ to P₁.
- Therefore the area of tax burden shown by B will have to be borne by the producer.

Situation of unitary elastic demand:-

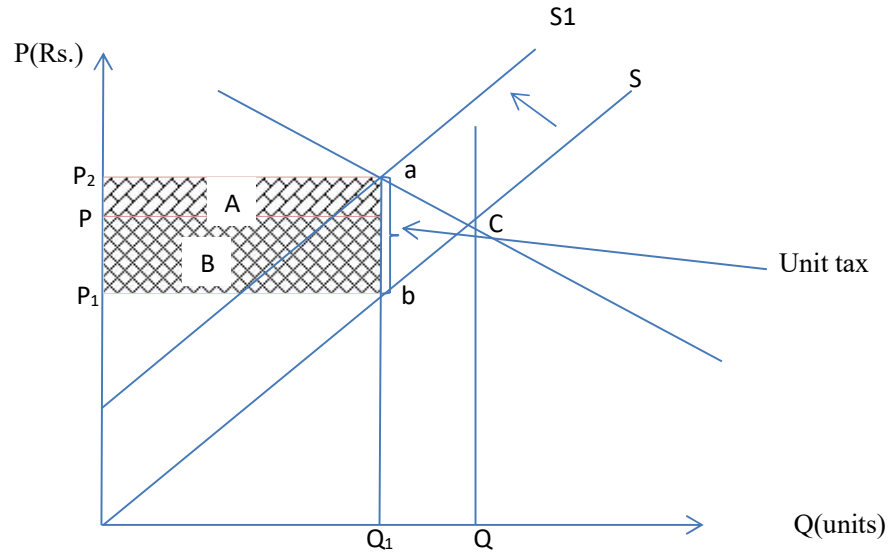


- In above graph point C shows equilibrium before tax and point a shows equilibrium after tax.
- Gap between a and b shows the amount of unit tax and in this situation the burden of tax is distributed between consumer and producer is equal.
- In this regard distance from P-P₂ shows the tax burden of the consumer and distance from P-P₁ shows the tax burden of the producer.
- Therefore the shaded area A shows the consumer's tax burden and the shaded area B shows the producer's tax burden.
- Situation of inelastic demand:-



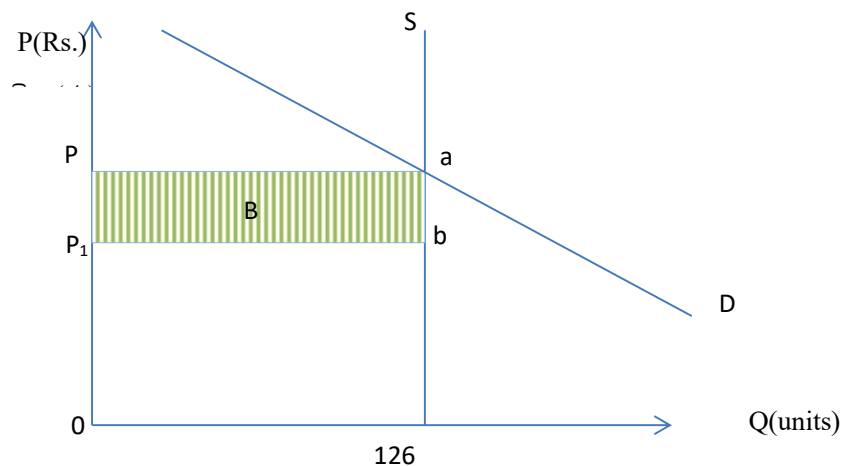
- According to the above graph point C shows the equilibrium before tax and point a shows equilibrium after tax.
- Distance from a to b shows the amount of unit tax while the amount of P-P₂ shows tax burden of the consumer and P-P₁ shows tax burden of the producer.
- Accordingly less tax burden for consumer shows by the area A and more tax burden is for producer which shows by the area B.
- Therefore at a situation of inelastic demand consumers bear most of the tax burden as shown by the shaded area A and producers bear less of the tax burden as shown by the area of B.

Situation of elastic demand:-



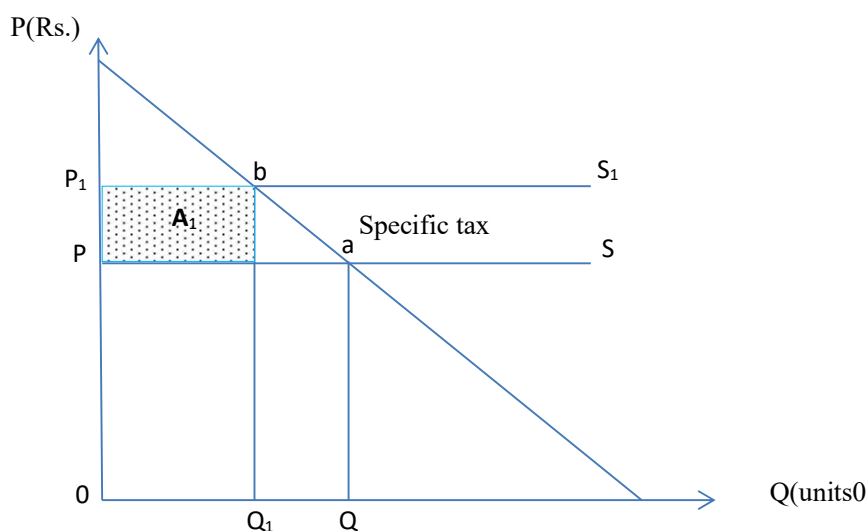
- According to the above graph point C shows equilibrium before tax and point a shows equilibrium after tax.
- Distance between a and b shows the amount of unit tax and in this situation consumer's tax burden is shown by the distance of P to P₂ and producer's tax burden is shown by the distance of P to P₁.
- Therefore less burden of tax shown by the area of A holds by the consumer and more burden of tax shown by the area of B holds by the producer.
- Incidence of tax at various situations of supply elasticity can be shown by the graphs below.

Situation of perfectly inelastic supply:-



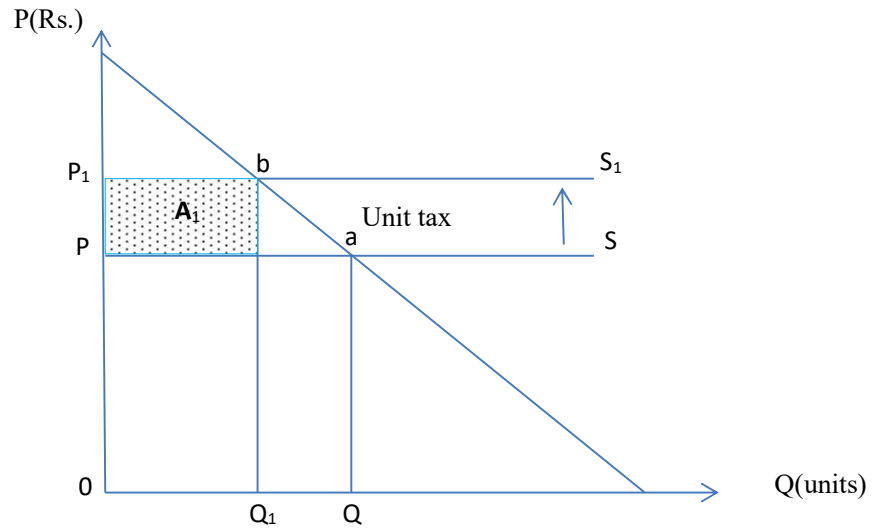
- When imposing a unit tax over a perfectly inelastic supply the supply curve remains constant.
- Due to this there will not be any change in equilibrium before and after the tax. Point a shows equilibrium before and after tax.
- In this situation there is no change in the price paid by the consumer. Also the equilibrium price before and after is depicted by the letter P.
- Therefore by the distance of a-b the price received by the producer is decreased and the price reduced from P to P₁.
- Following this the whole area of tax burden shown by B is borne by the producer.

Situation of a perfectly elastic supply:-



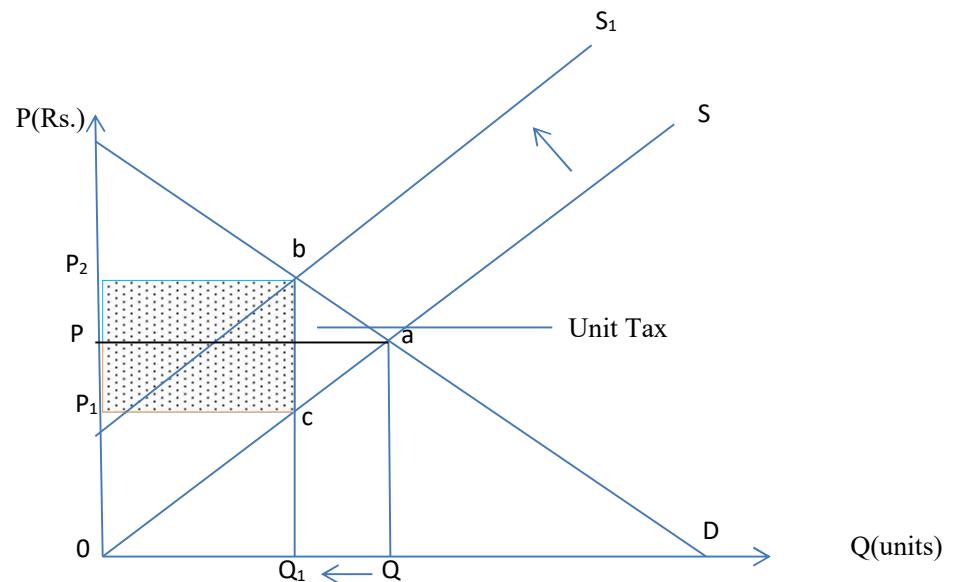
- According to the graph above point a shows equilibrium before tax and point b shows equilibrium after tax.
- Distance from b to c shows the amount of unit tax and the price paid by consumer or the equilibrium price increased by the same amount.
- This indicates that the total burden of tax shown by the area of A is borne by the consumer at a situation of a perfectly elastic supply.

Situation of unitary elastic supply:-



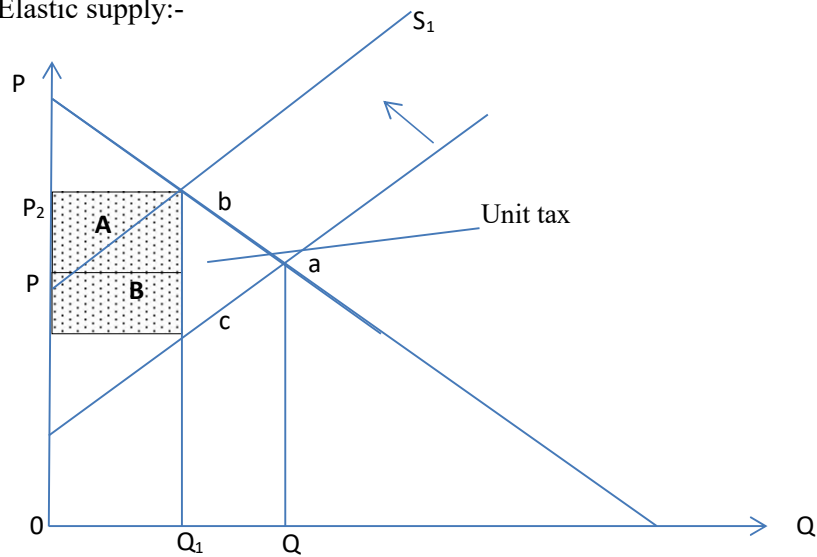
- According to the above graph point a shows equilibrium before tax and point b shows equilibrium after tax.
- Distance from b to c shows the amount of unit tax and the burden of tax distributed between consumer and producer is equal. (P-P₂- Producer P-P₁- Consumer)
- The area of A shows consumer's tax burden and area of B shows producer's tax burden.

Situation of inelastic supply:-



- According to the above graph point a shows equilibrium before tax and point b shows equilibrium after tax.
- Distance from b to c shows the amount of unit tax and P to P₂ shows consumer's tax burden and P to P₁ shows producer's tax burden.
- Therefore less burden of tax is shown by the area of A which will be borne by the consumer and more burden of tax is shown by the area of B which will be borne by the producer.

Situation of Elastic supply:-



- Equilibrium before tax is shown by point a and equilibrium after tax is shown by point b.
- Distance from B to C shows the amount of unit tax and P to P₂ shows the tax burden of the consumer and P to P₁ shows the tax burden of the producer.
- Therefore, more burden of tax shown by the area of A will be borne by the consumer and less burden of tax shown by the area of B will be borne by the producer.

Competency Level 3.4 : Analyses the government intervention to the market with providing of a unit subsidy over supplier.

Number of Periods : 08

Expected Learning Outcomes :

- Defines the unit subsidy given to a supplier.
- Analyses the effect over market equilibrium when providing a unit subsidy over a supplier with the demand and supply schedules.
- Analyses the effect over market equilibrium when providing a unit subsidy over a supplier with the demand and supply curves.
- Analyses the effect over market equilibrium when providing a unit subsidy over a supplier with the demand and supply equations.
- Analyses the welfare effect of a unit subsidy using graphs.

Instructions for Lesson Planning :

- Present the statement of **Government decides to provide fertilizer subsidy for paddy farmers** to the students.
- Inquires students' ideas related to the statement.
- Conduct a discussion highlighting the following facts.
 - Providing of subsidies over suppliers is done by the government.
 - Government provides subsidies on various objectives.
 - There are two forms of subsidies
 - Ad valerom subsidy
 - Unit subsidy
- Group students appropriately and engage them in the following activity.

Proposed Instructions for Learning:

- Pay attention to the pair of demand and supply equations assigned to your group, from the pair of demand and supply equations given below.
 - $Q_d = 100 - 2P$ and $Q_s = -60 + 3P$
 - $Q_d = 40 - 2P$ and $Q_s = -10 + 3P$
- Construct demand and supply schedules on same prices using the pair of demand and supply equations given to you.
- Draw demand and supply curves on the same diagram with the use of demand and supply schedules constructed by you.
- Calculate market equilibrium price, quantity, consumer surplus and producer surplus.
- Consider that the government provides a unit subsidy of Rs. 2.00 over this good.
- Construct new supply schedule after the subsidy on same prices used before considering new supply equations as $Q_s = a + b(P + 2)$
- Draw new supply curve relevant to the supply schedule on the same diagram draw before.
- Calculate market equilibrium price, quantity, consumer surplus and producer surplus after the subsidy with the use of that diagram.
- Compare between market situations of before the subsidy and after the subsidy using information found by you.

A Guidelines to Explain the Subject Matters:

- Providing a certain amount of rupees as a subsidy to the producers who produce one unit of a product is called a unit subsidy of suppliers
Example : Providing Rs. 10 subsidy per one 1Kg. of tea.
- Definite result of providing a unit subsidy is the decrease in cost of production.
- Due to this supply increases and supply curve shifts to the right by the amount of unit subsidy.

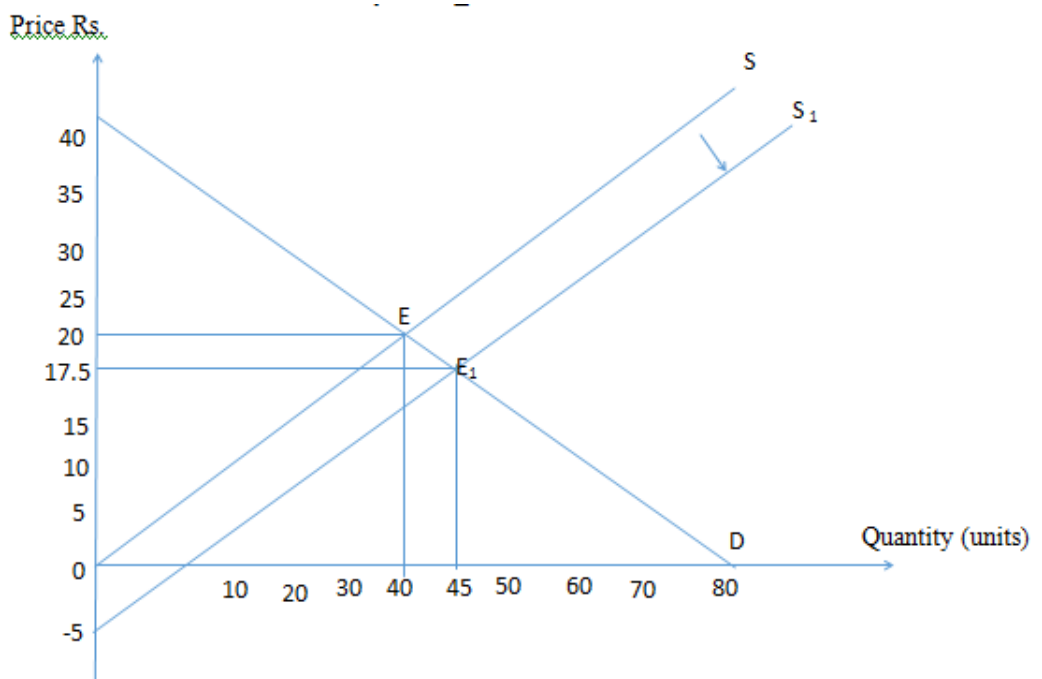
- After providing a unit subsidy, the influence on market equilibrium can be shown with a supply schedule, supply curve and supply equation is shown below.
- Demand and supply schedules relevant to a particular good sells at a competitive market is given below.

Price(Rs,)	Quantity demanded (units)	Quantity supplied (units)
0	80	0
5	70	10
10	60	20
15	50	30
20	40	40
25	30	50
30	20	60
35	10	70
40	0	80

- Assume that the government is providing Rs. 5subsidy over each unit of this good. The new supply schedule after providing the subsidy is as fallows.
 $Q_d = 80 - 2P$ $Q_s = 0 + 2P$

Price Rs.	Unit subsidy(Rs.)	Price after the subsidy(Rs.)	Quantity supplied Unit
0	5	-5	0
5	5	0	10
10	5	5	20
15	5	10	30
20	5	15	40
25	5	20	50
30	5	25	60
35	5	30	70
40	5	35	80

- As the cost of production decreases with unit subsidy the resulting increase of supply is explained by the schedule above.
- The information revealed by the schedule relating to the providing of a subsidy can also be shown by a curve as below.



- Due to providing of a unit subsidy supply curve shifts to the right from

S to S_1 by the amount of unit subsidy.

Equilibrium before the subsidy

Equilibrium Price = Rs. 20

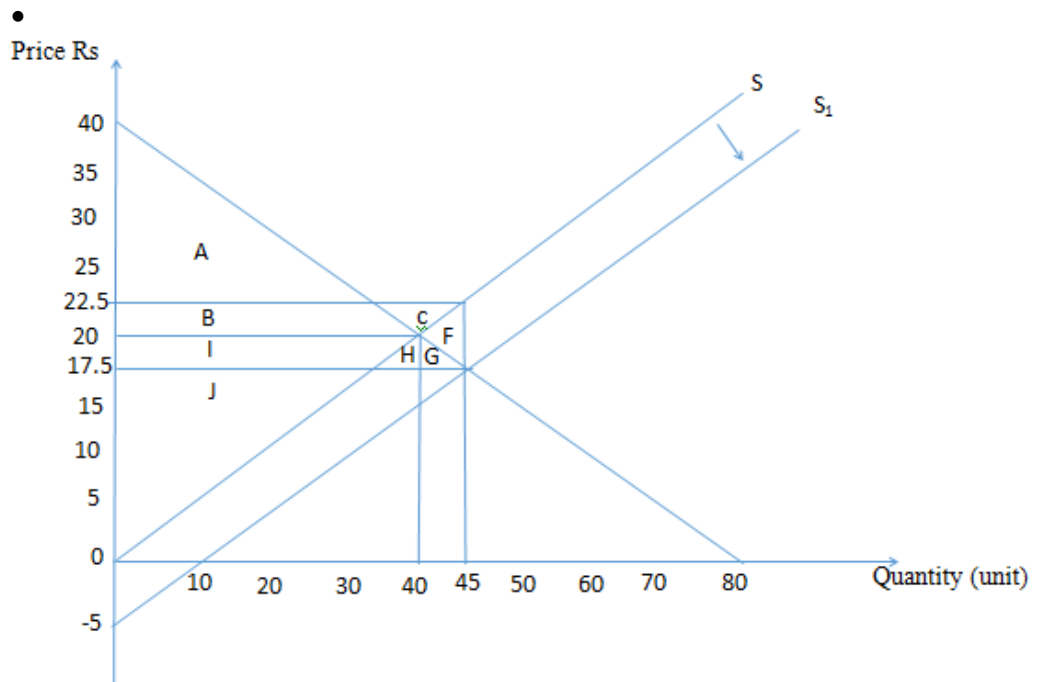
Equilibrium quantity = unit 40

Equilibrium after the subsidy

Equilibrium Price = Rs. 17.50

Equilibrium quantity = unit 45

- Other than change in equilibrium shown by the graph above, some other effects also arises with providing of a unit subsidy over producers.
- Those welfare effects can also be identified with the use of a graph as below.



Before the subsidies

$$\begin{aligned}
 \text{Consumer surplus} &= A + B \\
 &= \frac{(\text{Maximum demand price} - \text{Equilibrium Price}) \times \text{Equilibrium quantity}}{2} \\
 &= \frac{(40 - 20) \times 40}{2} \\
 &= \text{Rs. } 400 \\
 &= I + J
 \end{aligned}$$

$$\begin{aligned}
 \text{Producer surplus} &= \frac{(\text{Equilibrium price} - \text{Minimum supplied price}) \times \text{Equilibrium quantity}}{2} \\
 &= \frac{(20 - 0) \times 40}{2} \\
 &= \text{Rs. } 400
 \end{aligned}$$

$$\begin{aligned}
 \text{Economic surplus} &= (A + B) + (I + J) \\
 &= 400 + 400 \\
 &= \text{Rs. } 800
 \end{aligned}$$

After subsidies

$$\begin{aligned}
 \text{Consumer surplus} &= A + B + I + H + G \\
 &= \frac{(\text{Maximum demand price} - \text{Equilibrium Price}) \times \text{Equilibrium quantity}}{2} \\
 &= \frac{(40 - 17.50) \times 45}{2} \\
 &= \text{Rs. } 506.25
 \end{aligned}$$

$$\begin{aligned}
 \text{Producer surplus} &= B + C + I + J \\
 &= \frac{(\text{Equilibrium price} - \text{Minimum supplied price}) \times \text{Equilibrium quantity}}{2} \\
 &= \frac{(22.50 - 0) \times 45}{2} \\
 &= \text{Rs. } 506.25
 \end{aligned}$$

$$\begin{aligned}
 \text{Economic surplus} &= (A + B + I + H + G) + (B + C + I + J) \\
 &= 506.25 + 506.25 \\
 &= \text{Rs. } 1012.50
 \end{aligned}$$

III Increase in consumer surplus due

$$\begin{aligned}
\text{to the subsidy} &= (A+B+I+H+G) - (A+B) \\
&= I+H+G \\
&= 506.25 - 400 \\
&= \text{Rs. } 106.25
\end{aligned}$$

Increase in producer surplus due

$$\begin{aligned}
\text{to the subsidy} &= (B+C+I+J) - (I+J) \\
&= B+C \\
&= 506.25 - 400 \\
&= \text{Rs. } 106.25
\end{aligned}$$

Increase in economic surplus due = (I+H+G)+(B+C)

to the subsidy(I method)

$$\begin{aligned}
&= 106.25 + 106.25 \\
&= \text{Rs. } 212.50
\end{aligned}$$

(II Method)

Increase in economic surplus due to the subsidy = Before subsidy Economic surplus – After subsidy Economic surplus

surplus due to the subsidy

$$\begin{aligned}
&= 1012.50 - 800 \\
&= \text{Rs. } 212.50
\end{aligned}$$

Cost of government due to subsidy = B+C+I+H+G+F

(Method I)

$$\begin{aligned}
&= \text{Rs. } 5 \times 45 \\
&= \text{Rs. } 225
\end{aligned}$$

Effect over social =

welfare

due to the subsidy

**Increase in
consumer
surplus**

+

**Increase in
producer
surplus**

-

**Cost of
government**

$$\begin{aligned}
&= (I+H+G) + B+C - (B+C+I+H+G+F) \\
&= 106.25 + 106.25 - 225 \\
&= \text{Rs. } 12.50
\end{aligned}$$

(Method II)

$$\begin{aligned}
F &= \frac{\text{Difference in equilibrium quantity} \times \text{unit of subsidy}}{2} \\
&= \frac{5 \times 5}{2} \\
&= \text{Rs. } 12.50
\end{aligned}$$

- Economic effects arises with providing of a subsidy can also be explained with the use of equations.
- According to above example considered demand and supply equations before the subsidy are as follows.

$$Q_d = 80 - 2P$$

$$Q_s = 0 + 2P$$

- Equilibrium before the subsidy,

$$80 - 2P = 0 + 2P$$

$$80 = 4P$$

$$20 = P$$

$$\text{Equilibrium price} = 20$$

$$\begin{aligned} \text{Equilibrium quantity} &= 80 - (2 \times 20) \\ &= 40(\text{Units}) \end{aligned}$$

**As the cost of production reduces with unit subsidy,
Supply equation after the subsidy**

$$Q_s = 0 + 2(P + S) \leftarrow \text{Unit subsidy}$$

$$Q_s = 2(P + S)$$

$$Q_s = 2P + 10 \leftarrow \text{Supply equations after the subsidy}$$

$$Q_s = 10 + 2P$$

∴ Equilibrium after the subsidy

$$Q_d = Q_s$$

$$80 - 2P = 10 + 2P$$

$$70 = 4P$$

$$17.50 = P$$

$$\text{Equilibrium price} = \text{Rs. } 17.50$$

$$\text{Equilibrium quantity} = 10 + (2 \times 17.50)$$

$$\text{Unit } 45$$

(Other economic effects of a unit subsidy can also be examined by using equations.)

Competency Level 3.5 : Investigates the effects of price control on market operations.
Number of Periods : 08

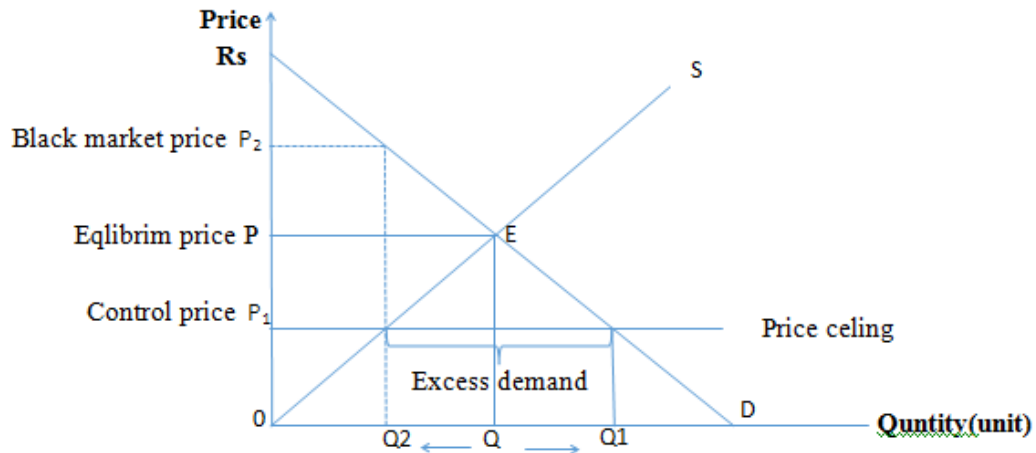
Expected Learning Outcomes :

- Defines the price control.
- Names out the different forms of price control.
- Defines the maximum price policy and demonstrates with demand and supply curves.
- Analyses the economic effects of maximum price policy.
- Describes the arrangements to make maximum price policy meaningful.
- Defines the minimum price policy and demonstrates by demand and supply curves.
- Presents the economic effects of minimum price policy.
- Describes the arrangements to make minimum price policy meaningful.
- Introduces the procedures for price stabilization.

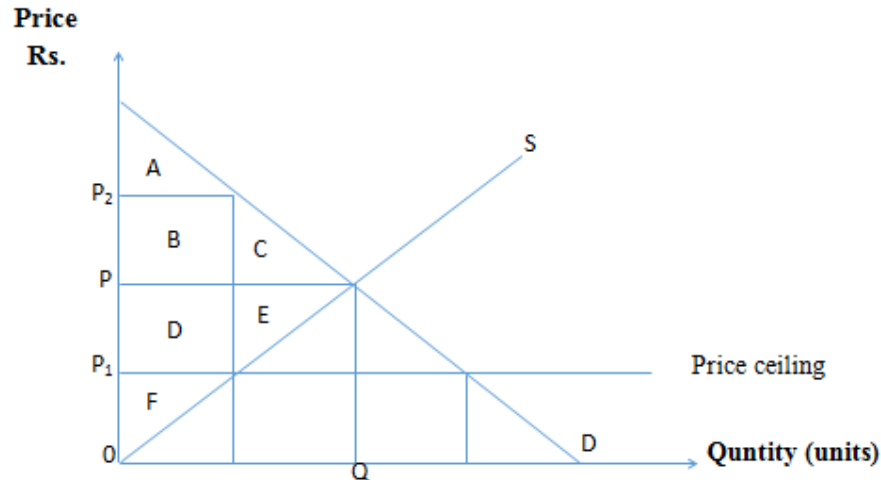
A Guidelines to Explain the Subject Matters:

- The prices of good or services which determined by the forces of demand and supply would not be fair to consumers and producers.
- In this situations government control the market price.
- The price control is creating of an artificial price at the market by the government using rule and regulations.
- Government aim is to protect producers and consumers by the price control.
- There are two types of price control.
 1. Maximum price – ceiling price
 2. Minimum price – floor price
- When the government think that market equilibrium is unfair for consumers to give them fairness the legal price decided by the government is called maximum price.
- It is better to implement the maximum price lower the equilibrium price as the aim of deciding maximum price is to provide fairness for the consumers.

- Such maximum price decided lower the equilibrium price is called as an effective maximum price.
Examples : implementing maximum price for Rice, Bread, Sugar and Dhal, Deciding of maximum rent for houses.
- Following graph presents such an effective maximum price control.



- Because of the maximum price control, the quantity demand increase from Q to Q_1 and quantity supplied decrease from Q to Q_2 .
- As a result of this, there is an excess demand of $Q_1 - Q_2$ is created with in the market.
- Similarly, producers tend to sell the supply Q_2 at price P_2 which is called black market price.
- Effects of maximum price can be further presented as below.
- Creation of shortage of goods, due to the excess demand.
- Attempt to sell goods at an illegal black market price,
- Because of the black market price, selling of goods at a price more than the previous price.
- Due to the maximum price as consumer surplus and producer surplus are adversely affected it will also badly affects social welfare.
- The effect of consumer and producer surplus and effect over welfare can be illustrated by a graph as follows.



- (i) Consumer surplus before maximum price ceiling = $A + B + C$
- (ii) Producer surplus before maximum price ceiling = $D + E + F$
- (iii) Economic surplus before maximum price ceiling = $A + B + C + D + E + F$
- (iv) Consumer surplus after price ceiling = A (lost of $B + C$)
- (v) Producer surplus after price ceiling = F
- (vi) Economic surplus after price ceiling = $A + F$
- (vii) Dead weight loss = $C + E$

- The way of calculating the dead weight loss.
- Two factors determine the inclusion of $B + D$ to the consumer surplus
 1. Money and time spent to purchase scarce goods
 2. Time spent at the queue.
- If the consumer would not spend an additional cost due to above two reasons, area of $B + D$ added to the consumer surplus.
- According to above information, effect of maximum price over consumer can be analyzed in two ways.
 1. $B + C =$ lost of consumer surplus
 2. $B + D =$ Increasing of consumer surplus
- By adjusting the effect over consumer with producer loss of producer surplus, dead weight loss can be obtained as below.

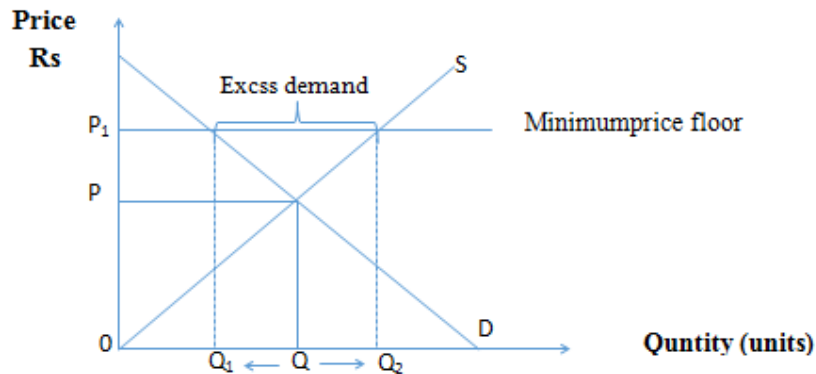
$$\begin{aligned} \text{Dead weight loss} &= B + D - (B + C + D + E) \\ &= - (C + E) \end{aligned}$$

- Maximum price is meaningful only if consumer received expected benefit as it is.
- There are several approaches that can be taken to make maximum price meaningful.
 1. Import
 2. Providing incentives for the producers
 3. Rationing
- Goods can be imported as a remedy to the shortage of the goods arise due to the excess demand created by the maximum price. By doing so the benefit of imposing a maximum price can be given to the consumer.
- Similarly by taking actions to encourage the producers who discouraged by the maximum price and by preventing market distortions the expected benefit has to be rationed among consumers.
- As the price mechanism being neutralized due to the maximum price policy scare, goods have to be rationed by using non price rationing techniques. Non price rationing techniques are as follows.
 - Use of ration cards
 - Queueing method
 - Rationing with bribes
 - Distribute connecting with other goods
 - Black market price

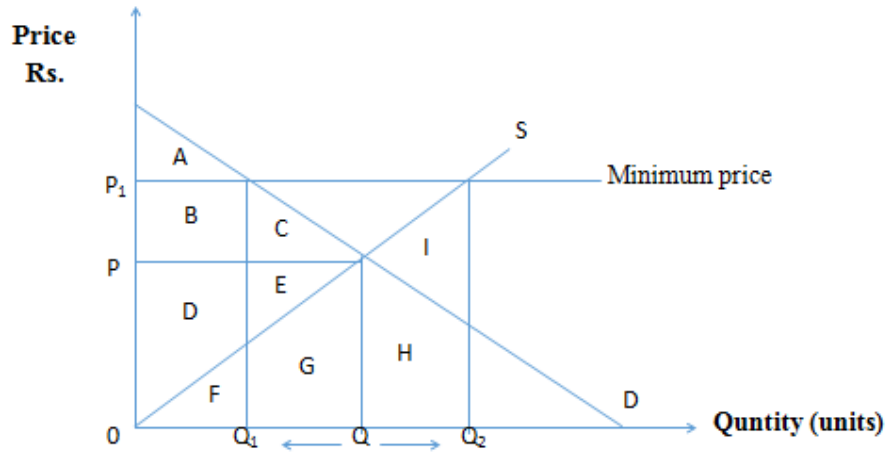
Implementing minimum price control.

- Based on the belief that the market price determined by the forces of demand and supply is unfair to producers the price which is legally implemented higher than the equilibrium price to give a better price for producers is known as minimum price.
- Minimum price should be imposed higher than the equilibrium price as the aim of the minimum price is to give fairness for producers.
- The minimum price which implement higher than the equilibrium price is called efficiency minimum price.
Example : Implementing a minimum price for paddy implementing minimum wage rates.

- Minimum price implementation can be illustrated with the following diagram.



- According to above graph, because of the implementing minimum price P_1 , the market supply increases from Q to Q_2 and quantity demanded decrease from $Q - Q_1$.
- As a result an excess supply created at the market.
- Effects of minimum price policy can be further illustrated as follows.
 1. Accumulation of excess production of the market.
 2. Unemployment problems can occur
 3. Goods can be supplied to consumers at a discounted rate by keeping minimum price as nominal price. Sellers try escape from the law.
 4. Excess investment situation can be occurred.
 5. Affect over social welfare due to the effects over consumer surplus and producer surplus.
- Welfare effects of minimum price policy can be illustrated with the following diagram.



Before minimum price,

$$\text{Consumer surplus} = A + B + C$$

$$\text{Producer surplus} = D + E$$

$$\text{Economic surplus} = A + B + C + D + E$$

After minimum price,

$$\text{Consumer price} = A$$

$$\begin{aligned} \text{Producer surplus} &= \text{Producer revenue} - \text{Producer Variable cost} \\ \text{(if the producer determine to supply } Q_1) &= (B + D + F) - F \\ &= B + D \end{aligned}$$

$$\text{Economic surplus after minimum price} = A + B + D$$

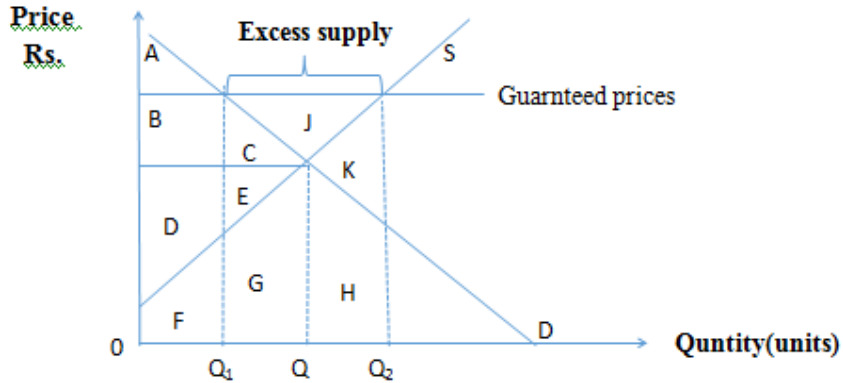
$$\begin{aligned} \text{Producer surplus} &= \text{Producer revenue} - \text{Producer Variable cost} \\ \text{(if the producer determine to supply } Q_1) &= B + D + F - (F + G + H + I) \end{aligned}$$

$$= B + D + F - (F + G + H + I)$$

- Although producer decided to supply Q_1 as consumer demand Q_2 producer revenue of $B+D+F$ will be less than his cost.
- This explains that although the minimum price is implemented to give benefits to producers it will not provide expected benefit to them.
- Therefore, to implement minimum price meaningfully some actions have to be taken. Following are some of such actions
 1. Storing of excess supply
 2. By products
 3. Promoting the current demand
 4. Exports
- In addition to the above activities, a special activity which the government use to implement minimum price meaningfully is known as price supporting policy.
- In price supporting policies it is certified that the minimum price will be received by the producer. Therefore the minimum price is considered as a certified price. With considering minimum price as a certified price there are two forms of price supporting policies which followed by the government to increase producers' income while protecting them;
 1. Price supporting government purchases
 2. Deficiency payment system

price supporting policy with the government purchasing refers to the purchase of excess supply by the government remain after which the amount purchased by consumers from the total amount of goods producers are willing to supply to the market at the minimum price decided by the government.

- The effects of purchasing the excess supply by the government can be presented using a graph as below.



1. Consumer surplus before certified price = $A + B + C$

Consumer surplus after certified price = A

Loss of consumer surplus = $A + B + C - A$

2. Producer surplus before certified price = $B + C$

Producer surplus after certified price = $Q + E$

Increase in producer surplus = $B + C + J$

Government expenditure to purchase excess supply at certified price = $C + E + G + H + K + J$

Consumer outlay = $B + D + F$

Producer revenue = $B + C + J + D + E + F + G + H + K$

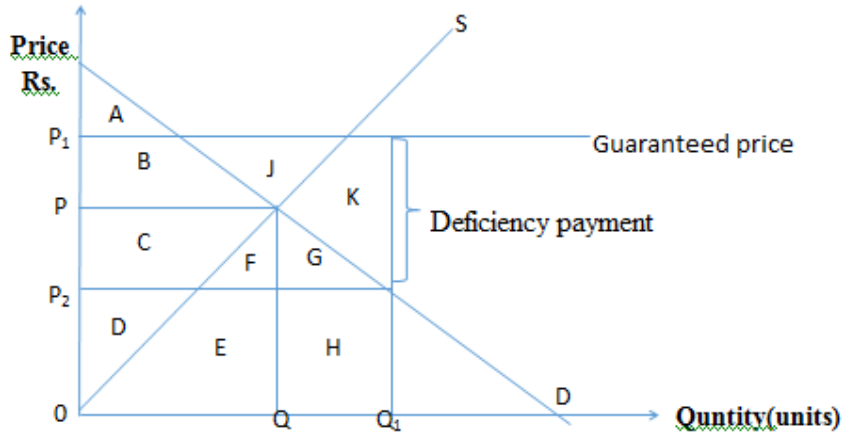
(Producer revenue = consumer outlay + Cost to the government)

$$\begin{aligned}
 \text{(iii) Effect over social} &= \text{Increase in producer surplus} - \text{Decrease in Consumer surplus} + \text{Cost of government} \\
 &= B + C + J - (B + C + E + G + H + K + J) \\
 &= -(C + E + G + H + K)
 \end{aligned}$$

- Loss of welfare by an amount of $C + E + G + H + K$ took place due to the purchasing of excess supply by the government
- Deficiency payment system is the system in which government pay the difference between the minimum price imposed by the government and the

price that the consumers are willing to pay to purchase the total supply that the producers are willing to supply at that minimum price.

- Deficiency payment system can be illustrated by a graph as below.



- (i) Consumer surplus before certified price = A + B
 Consumer surplus after certified price = A+B+C+F+G
 Increase in consumer surplus = A+B+C+F+G – A+B
 = C+F+G
- (ii) Producer surplus before certified price = C + D
 Producer surplus after certified price = C+D+B+J
 Increase in producer surplus=B+J

The total market supply of producer P1 at certified price = Q1

Market price for Q1 or the price that consumer is willing to

Pay for Q1 = P2

The cost of government for deficiency payment = B+J+C+F+G+K

$$\begin{aligned}
 \text{Effect over welfare} &= \text{Change in consumer surplus} + \text{Change in producer surplus} - \text{Cost of the government} \\
 &= C+F+G+B+J-(B+J+C+F+G+K) \\
 &= -K
 \end{aligned}$$

Deficiency payment is = -K

Producer revenue by deficiency payment = B+J+K+C+F+G+D+E+H

Consumer outlay =D+E+H

(Government cost + consumer outlay = producer revenue)

- Frequent fluctuations of the prices of the goods produced is considered as price instability. When prices are unstable it will also occurs instabilities in the incomes of producers
- Fluctuations of the prices of agricultural goods can be commonly seen in the world today. Frequent fluctuations of prices of agricultural goods became a major problem due to income of farmers being unstable.
- In such situations to stabilize income of cultivators government follows various price stabilization policies.
- Impose of rations over producers, accumulation of stock and distribution, limiting of the lands cultivated , impose of tariffs over imports, rationing of imports, limit imports, limit import as desired are some of the price stabilization techniques followed.
- Impose of rations over producers is an important price stabilization technique. Impose of a maximum limit by the government over the amount of goods produced within a particular period of time is called rationing of products,
- By this, it is expected to maintain price at a high level by limiting the supply which reach the market.

Competency 04 : Explores the rational behaviour of production firms within the market and behaviour of factor market.

Competency Level 4.1 : Analyses the behaviour of short term and long term production process of a business firm.

Number of periods : **08**

Expected Learning Outcomes :

- Introduces business firms and explains their various forms.
- Explains the relationship between inputs and outputs based on production function.
- Explains the difference between short term and long term production process based on a production function.
- Defines The Law of Diminishing Marginal Returns.
- Presents assumptions of the Law of Diminishing Marginal Returns.
- Presents The Law of Diminishing Marginal Returns numerically and graphically.
- Defines concept of total product, average product and marginal product of short run production process.
- Analyses the relationship among total product, average product and marginal product.
- Defines The law of Returns to Scale.
- Analyses the reasons for Increasing returns to scale, decreasing returns to scale and constant returns to scale of the production process.

A Guidelines to Explain the Subject Matters:

In an economy to fulfill human wants, goods and service are produced and supplied to the market by various production units.

- In this production process, productive economic resources combine with each other.

- A unit which combines necessary resource in this way and a unit which organizes production is called a production firm.
- Production function within a market economy varies with each other . they are as follows;
 - Sole proprietorships
 - Partnerships
 - Incorporated companies
 - Co-operative
 - Public Enterprises (Public Corporation, Public Department, Public Companies)
- Any production firm’s main objective is to maximize profit.
- However, there are differences existing among production firms related to the firm’s expected profits.
- The process of converting production resources to goods and services is defined as production.
- Within this process inputs are converted to output through a technical approach.
- The technical relationship between inputs and outputs is called a production function.

$$\boxed{Q = f(L, K)} \quad \leftarrow \text{Production function}$$

Q = Output

f = Function

L = Labour

K = Capital

- Above function depicts that the output of a particular goods is dependent upon the inputs of labour and capital.
- A producer can increase or decrease output by increasing or decreasing inputs.
- In this regard some inputs can be changed fast and some inputs cannot be changed accordingly.
- Increasing or decreasing output is dependent upon the extent of the producer's ability to change inputs.
- In this way two time periods relating to production are identified depending upon the time taken to change inputs.

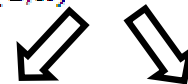
1. Short Run

2. Long Run

- Time period where some inputs of the production process (at least one production factor) Can not be changed is known as short run.
- In this regard two factors called fixed input and variable inputs can be seen in the short run.
- Remaining technology and capacity of a firm constant the technical relationship between input and output following a change in variable inputs is called a short run production function.

Which means,

$$Q = f(L, K)$$



Variable Input

Fixed input

(Labour)

(Capital)

- As only the variable input can be changed the production function is further mentioned as follows.

$$Q = f(L_1, L_2, L_3, \dots, L_n, K)$$

- Labour as the meaning of the variable input, it can be also shown as follows.

$$Q = f(V_1, V_2, V_3, \dots, V_n, K)$$

- The time period sufficient to change all inputs relevant to a production process is called long run.
- In this regard all inputs of a production firm at long run are called variable inputs.
- The relationship between inputs and output of a production process following a change in all relevant inputs is called a long run production function. It can be shown as follows.

$$Q = f(L_1, L_2, L_3, \dots, L_n, K_1, K_2, K_3, \dots, K_n)$$

- As there are two time periods existing relevant to production, the production process is classified in two stages – following those two time periods.

- 1. Short run production process**

- 2. Long run production process**

- Production firms that operate at short run production process, use both variable and fixed inputs.
- In this regard production firms engage in production increasing only the variable inputs while keeping the fixed inputs constant.
- When increasing the production only by changing the variable inputs keeping the fixed inputs constant, output follows a particular pattern.
- This behavior of short run output is explained by The Law of Diminishing Marginal Returns.
- In short run when Increasing only variable inputs mixed with fixed inputs, the decrease in marginal product and average product of the variable factor after a certain point is called The Law of Diminishing Marginal Returns.
- This law of diminishing marginal returns relevant to short run output is based on the following assumptions.
 1. All variable inputs are homogeneous
 2. Within the relevant production process technology remains constant

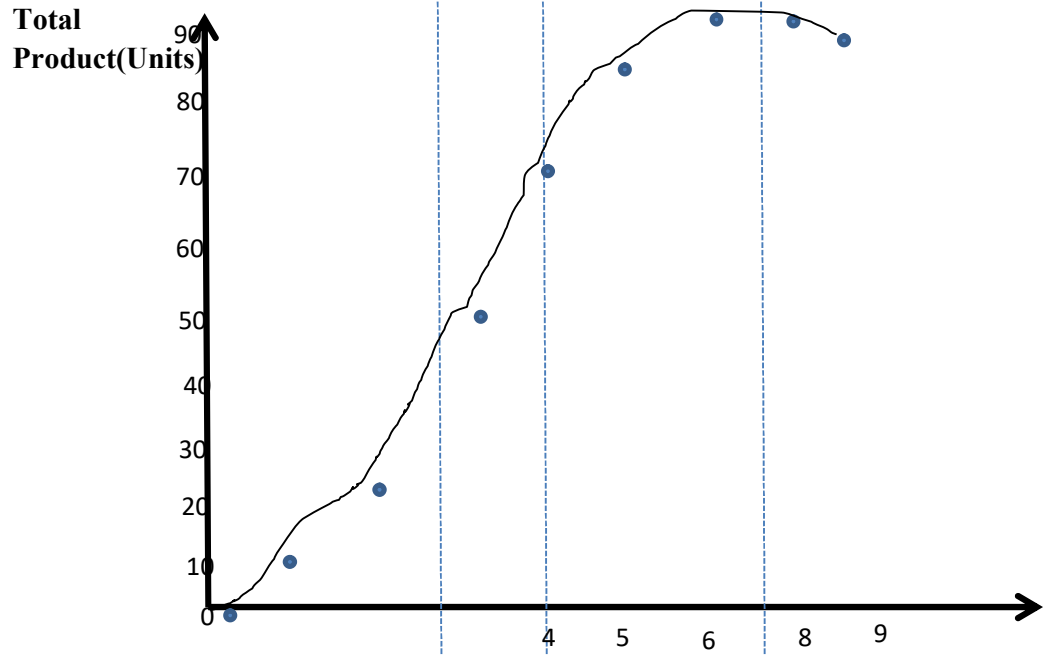
- The Law of Diminishing Marginal Returns is based on above mentioned assumption can be explained with the use of an example below.

Example : Employing labourers to cultivate tea on a one acre land

Fixed input \longrightarrow **Land**
Variable input \longrightarrow **Labourers**

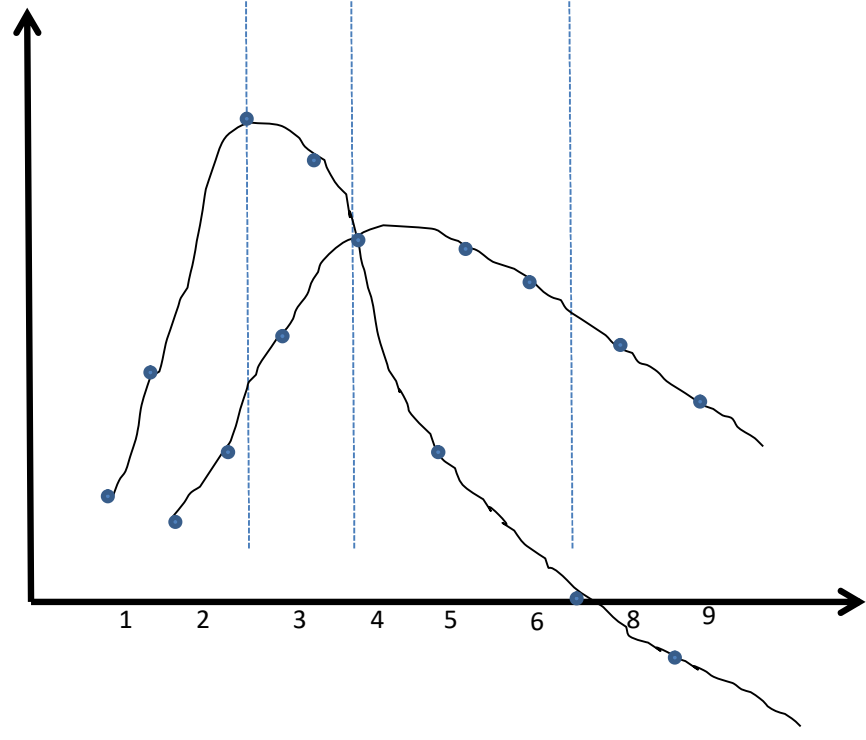
- In this as the variable inputs increase along with a fixed factor, as the amount of fixed factor distributes among variable factors the amount of fixed factor receives to one unit of variable factor is gradually decreases.
- However, When employing more of labour to cultivate tea exceeding the amount of labour that can be employed within one acre the output of tea is not increased with the proportion of increase in labour.
- When the increase in labour exceeds the limit the output received will not be increased by the proportion increase in labour.
- On the other hand when the labour increases one by one the output added to total output will be decreased and it can reach zero as well.
- The information revealed through the law of diminishing marginal returns can be further explained through schedules and graphs.

Fixed factor (Acres)	Variable factor (Labour)	Total Product (TP)	Average Product (AP)	Marginal product (MP)
1	0	0	0	
1	1	6	6	6
1	2	20	10	14
1	3	48	16	28
1	4	72	18	24
1	5	80	16	08
1	6	84	14	04
1	7	84	12	0
1	8	80	10	-4



Variable inputs (Units)

Average Product / Marginal product



Variable inputs (Units)

- According to above diagrams, Total product first increases at an increasing rate and then the rate of growth declines gradually.
- If variable factors increase further, the total product will reach its maximum at a certain point and then it can be decreased.
- There are three stage of the behaviour of production

1. Total Product Increases at an increasing rate

2. Total Product Increases at a decreasing rate

3. Decreasing in total product

- When the total product increases at an increasing rate the marginal product will be maximum and when rate of total product decrease the marginal product curve decreases fast intersecting the maximum point of average product curve. In this situation average product will be in its maximum in addition marginal product will be zero when product is at its maximum.
- If there is any possibility to change the fixed factors along with the increase of the variable factors the decrease in marginal product can be eliminated. However, fixed factors cannot be increased at short run
- Within short run production process there are three forms of production identified when only variable factors along with fixed factors are increased.

1. Total Product (TP)

2. Average Product (AP)

3. Marginal Product (MP)

- When engaged in production mixing variable factors with fixed factors, the output result is identified as total product.

Example : From one acre paddy land If 100 Laburers obtain 1500 bushels of paddy per day it is identified as total product.

- The average output received per one unit of variable input is identified as average product.
- Average product is obtained by dividing total product from variable inputs.

$$\text{Average Product} = \frac{\text{Total Product}}{\text{Variable product}}$$

$$\begin{aligned} \text{According above example} &= \frac{1500}{100} \\ &= 15 \text{ Bushels} \end{aligned}$$

- The change in total product due to a change in one unit of variable input is identified as marginal product.
- Marginal product is obtained by dividing the change in total product by change in variable inputs.

Example:

Labour			Total Product(Units)
100	>	20	1500
120			2000

$$\begin{aligned} \text{Marginal Product} &= \frac{\text{Change in total product}}{\text{Change in Variable input}} \\ &= \frac{1500}{20} \\ &= 25 \text{ Units} \end{aligned}$$

- In long run a production firm can engage in production while changing all inputs.
- The behavior of output following a change in all inputs is defined as The Law of Returns to Scale.
- In long run a production firm can change its total capacity.
- In long run when all inputs become variable the behavior of output can be seen in three ways.

1. Increasing returns to scale

2. Decreasing returns to scale

3. Constant returns to scale

- Real benefits received through the increase of efficiency of factors due to the expansion the of firm's capacity is identified as returns to scale.
- Large proportionate increase in output more than the proportionate increase in all inputs is defined as increasing returns to scale.

Example : When increasing inputs by 20% the output increase by 30%

- Few factors affect increasing returns to scale.
 1. Indivisibility of production factors
 2. Specialization through division of labour
 3. Use of machinery
 4. Existence of one time cost
- Proportionate increase in output less than the proportionate increase in input is defined as decreasing returns to scale.

Example : When increasing inputs by 20% the output increase output by 15%

- Following factors affect the decrease in returns to scale :
 1. Depreciation of factors
 2. Stress
 3. Problems of coordination and management
- Proportionate increase in output by the same percentage of increase in input is defined as constant returns to scale

Ex : When increasing inputs by 20% the output increase by the same percentage of 20%

Competency Level 4.2 : Comparative analyses the basic concepts related to the cost of production.

Number of periods: 08

Expected Learning Outcomes :

- Defines cost of production.
- Explains the basic concepts related to the production process.
- Explains the difference between direct cost and indirect cost with examples.
- Explains the difference between Accounting cost and Economic cost with examples.
- Explains sunk cost with examples.
- Defines normal profits.
- Presents reasons for the inclusion of normal profit on production cost.

A Guidelines to Explain the Subject Matters:

- Cost of production is a phenomenon arising through a production process and it is also considered as a financial phenomenon.
- Cost of production expresses the monetary value of all factors of production forgone during a production process and this value should express the actual value of opportunity cost.
- Within a production process when utilizing resources for a particular use the value of the next best alternative which was able to produce using same resources is defined as opportunity cost of production process.
- In this regard the forgone value of all economic resources within a production process is explained by the concept of opportunity cost more meaningfully.
- opportunity cost consists of two types of costs normally direct costs and indirect costs.

Opportunity cost = Direct cost + Indirect Cost

(explicit cost) (Implicit cost)

- The amount of money spent to purchase inputs from outside of the firm for production process is called direct cost.

Example : Money spent to purchase inputs

Money spent to pay wages of workers

Money spent for energy and electricity

- The opportunity cost of resources owned by the firm which used in production process is called indirect cost.
- Components of indirect costs are given below,
 - Forgone income
 - Forgone interest of producers
 - Economic depreciation
 - Normal profit
- An entrepreneur at present remains within a particular business activity by dedicating his labour. If he had employed his labour in another business activity he could have earned a salary from that. This salary is the amount of income forgone by this person.

Ex : Assume an entrepreneur has started a water bottling firm. If this entrepreneur worked in some other production firm and earned Rs. 60,000/- that would be the amount of income forgone by him.

- The amount of forgone interest of producer means the opportunity cost of own capital used in the production.
- Assume an investor invested Rs. 5 million to run a business. On the one hand if he had invested this money to purchase securities without investing money in that particular business, he could have earned an interest income. On the other hand if he had deposited this money in a bank he could have earned an interest income. However, as he had forgone this interest income by investing it is considered as an opportunity cost.
- At a given period of time the reduction in the market value of capital assets is called economic depreciation.

For Example: At the beginning of the year the value of capital assets of a particular business equals Rs. 50,000/- and at the end of the year the value equals Rs. 40,000/- the value of economic depreciation would be Rs. 10,000/-

- Therefore, this Rs. 10,000/- is considered as an indirect cost.
- The owner of a firm supplies entrepreneur skills (organization of production activities, bearing risks, making of business decisions, innovations etc.) during a production process.
- The benefit received by an entrepreneur for the above mentioned entrepreneur skills is called profit.
- The minimum or the average profit that an entrepreneur receives for such a production activity is called normal profit.
- If an entrepreneur does not receive this minimum profit he she will not be able to sustain the business. Therefore normal profit is also considered as an indirect cost as it shows the opportunity cost of an entrepreneur.

For Example : An entrepreneur currently works at a production firm A and if he had worked for production firm B he could have earned Rs. 40,000/- minimum profit. If he does not gain this Rs. 40,000/- working at production firm A, he will not remain in production and will move to another as he does not gain the forgone amount of Rs.40,000/-.

- An Accountant includes only direct costs (financial costs) under cost of production.
- Therefore, Accounting cost is equal to direct cost.
- Accounting profit is estimated by deducting direct costs from the total revenue.

$$\text{Accounting Profit} = \text{Total Revenue} - \text{Direct Cost}$$

For Example : The output of a firm equals 500 units and price of one unit equals Rs.20. The firm has spent Rs. 2000/- to purchase inputs and Rs. 1000/- to pay salaries of workers. Also the firm spent Rs. 500/- for energy and electricity. In addition Rs. 800 was spent to pay interest for borrowings. Estimate the value of profit.

$$\begin{aligned} \text{Total revenue} &= 500 \times 20 \\ &= 10000 \end{aligned}$$

$$\begin{aligned} \text{Direct Cost} &= 2000 + 1000 + 500 + 800 \\ &= 4300 \end{aligned}$$

$$\begin{aligned} \text{Accounting profit} &= 10000 - 4300 \\ &= \underline{\underline{5700}} \end{aligned}$$

- In economics the cost of production is calculated with a broader meaning.
- Economists consider opportunity cost as the cost of production.
- This opportunity cost also is called as real cost and also economic cost.
- Economic cost consists of both direct and indirect costs. Therefore

$$\text{Economic Cost} = \text{Direct Cost} + \text{Indirect Cost}$$

- When estimating profits in economics not only direct costs but also indirect costs are considered.
- Because, when employing resources for a particular production process it has sacrificed all the other alternatives on which these resources could be employed.
- Due to this reason economic profit is calculated by deducting economic cost from total revenue

$$\text{Economic Profit} = \text{Total Revenue} - \text{Economic Cost (Direct Cost + Indirect Cost)}$$

Ex :

output of a firm	= 500 Units	}	Direct costs
Price of one unit of output	= Rs. 20		
Wages for labour	= Rs.1000		
Purchasing of inputs	= Rs. 2000		
Payment for energy and electricity	= Rs. 500		
Interest payment for borrowing	= Rs. 800		
		}	Indirect Costs
Forgone wage income	= Rs.500		
Economic depreciation	= Rs.200		
Forgone interest income	= Rs.100		
Normal profit	= Rs.1000		

$$\begin{aligned} \text{Total revenue} &= 500 \times 20 \\ &= \text{Rs. } 10,000 \end{aligned}$$

$$\begin{aligned} \text{Direct costs} &= 2000 + 1000 + 500 + 800 \\ &= \text{Rs. } 4300 \end{aligned}$$

$$\begin{aligned} \text{Indirect costs} &= 500 + 200 + 100 + 1000 \\ &= \text{Rs. } 1800 \end{aligned}$$

$$\begin{aligned} \text{Economic profit} &= 10000 - (4300 + 1800) \\ &= \text{Rs. } 3900 \end{aligned}$$

- To estimate economic profit more precisely, the related opportunity cost should be estimated correctly.
- Otherwise the economic decisions made would not be efficient.
- Sometimes the things that should be included under opportunity cost are not included and the things that should omit from opportunity cost may be included it that happens it is erroneous.
- The concept of sunk cost is important in deciding which should include under opportunity cost and which is not.
- If the cost spent in the past cannot be recovered at present than it is called sunk cost.
- Some examples for sunk costs are as follows :
 - Cost spent by a firm does to purchase fixed assets in short run.
 - If a production firm produces or does not produce cost of the fixed assets has to be made.
 - The amount of the money spent to purchase these fixed assets cannot be regained as it is buried with the production activity
 - Example 1 : electricity generator installed at a hydropower plant

At the point in time when this machine was purchased, the money spent involved an opportunity cost. However, after purchasing this machine from that money and installed at hydro power plant there will not be any opportunity cost incurred with that money. The reason for this is now the machine does not consist of alternative uses. If the machine is not used for the production process of hydro power it will remain neutral.
 - Example 2

After purchasing Rs.500 worth of ticket to see a stage drama and entering the theater if the person leaves before end of the drama, the money spent to see this stage drama cannot be regained from the organizers. It is considered as a sunk cost. As there are no other alternatives to this ticket except seeing the drama it also involves a zero opportunity cost.

Competency Level 4.3 : Analyses the behavior of cost of production within a production process.

Number of periods : 08

Expected Learning Outcomes :

- Defines elements of the short run production cost.
- Computes elements of the short run production cost.
- Analyses the elements of the short run production cost based on schedules and graphs.
- Analyses the relationship between short run production cost curves and product curves.
- Analyses the behaviour of long run average cost curves and their relationship to returns to scale.
- Defines economies of scale and diseconomies of scale
- Presents reasons for economics of scale and diseconomies of scale.

Instructions for Lesson Planning:

- Inquire from students about the expenses to be incurred by an individual who intends to sell milk coffee by using a milk coffee maker.
- Conduct a discussion highlighting the following facts.
 - Expenditure includes cost of the milk coffee maker, costs of milk powder, cost of coffee, cost of sugar, costs of plastic cups, expenses on electricity etc Cost of the milk coffee maker is a fixed cost
 - Other expenditures are variable costs
 - Likewise, there are two types of costs a production firm will incur
 - Fixed costs
 - Variable cost

Proposed Instructions for Learning:

- The fixed cost of producing commodity X is Rs. 60 the quantity of output and variable cost of production of the commodity is given below.

Quantity of output(Q)	Variable cost of productio(TVC)
1	30
2	40
3	45
4	55
5	75
6	120

- The fixed cost of producing the commodity Y is Rs. 120 the quantity of output and variable cost of production ofn the commodity are given below.

Quantity of output(Q)	Variable cost of productio(TVC)
1	30
2	40
3	45
4	55
5	75
6	120

- Prepare a schedule to show the total fixed cost at each level of output.
- Calculated the total cost each level of output and enter them into the same schedule.

- Graph the information given in the schedule you prepared showing the cost along the vertical axis and the quantity of output along the horizontal axis.
- Prepare a schedule showing the increase in total cost (marginal cost MC) as the quantity of output is increased by one unit.
- Construct a new graph using the information presented in the above schedule.(show the cost along the vertical axis and quantity of output along the horizontal axis).
- Calculate the average total cost of output(ATC) and show it in the same schedule.
 - Graph the average total cost of output
 - Calculate the average variable cost of output, show in the same schedule and then graph
 - Comment on MC, ATC, AVC curves
 - Prepare to present your findings to the entire class in an innovative manner

A Guidelines to Explain the Subject Matters:

- The cost of production is a derived phenomenon of a production process.
- Therefore there are two types of cost of production related to short run and long run production process.

1 Short Run Production cost

2 Long Run Production cost

- Short run production process uses both variable cost and fixed cost because of that there are two types of cost.

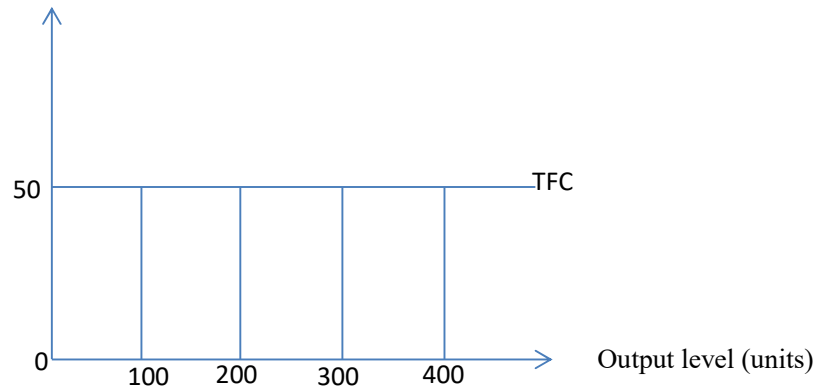
1 Total fixed cost(TFC)

2 Total variable cost(TVC)

- Short run total cost is obtained from sum these two costs.
- Additional to these costs, we can identify more cost concepts in a short run production process.
 - **Average Fixed Cost (AFC)**
 - **Average Variable Cost (AVC)**
 - **Average Total Cost (ATC)**
 - **Marginal cost (MC)**
- The cost bearing for fixed factors (input) related to the production process is known as total fixed cost.
- Total fixed cost does not change with the output.
- Which means there is no relationship between total fixed cost and the output level.
- Although the production level is zero there is a fixed cost.
- Because of this total fixed cost can be eliminated by a firm during short run..
 - Normal Profit
 - Cost depreciation
 - Property tax
 - Insurance installments
 - License charges
 - Interest for capital
 - Wages for managers and directors who work on contract basis.
- Total fixed cost always remains constant in every production level as there is no relationship between output and total fixed cost.

- Because of this the total fixed cost curve is parallel to the quantity axis.

Total Fixed Cost



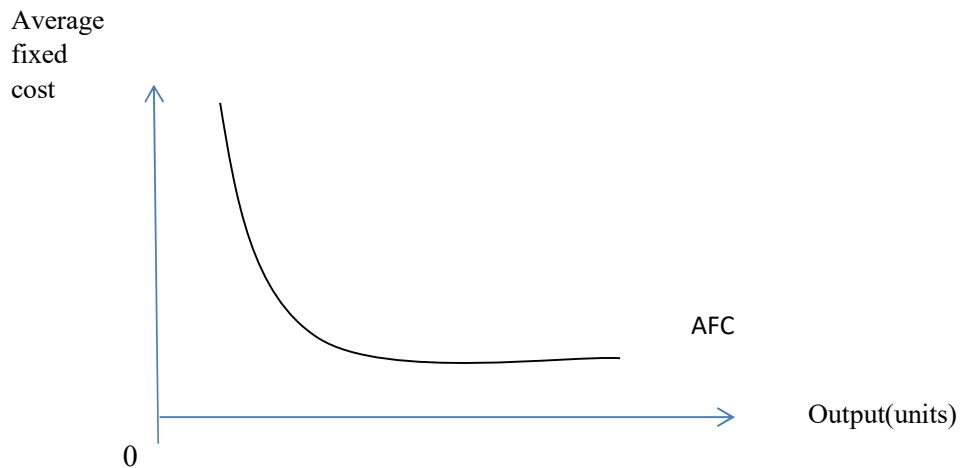
- According to the above diagram total fixed cost at zero output level is Rs. 50 and when output level increases as 100, 200, 300, and as 400 total fixed cost remains unchanged.
- Fixed cost per unit is known as average fixed cost, Average fixed cost is obtained by dividing total fixed cost from output.

$$\text{Average Fixed Cost} = \text{Total Fixed Cost} \div \text{Total Output}$$

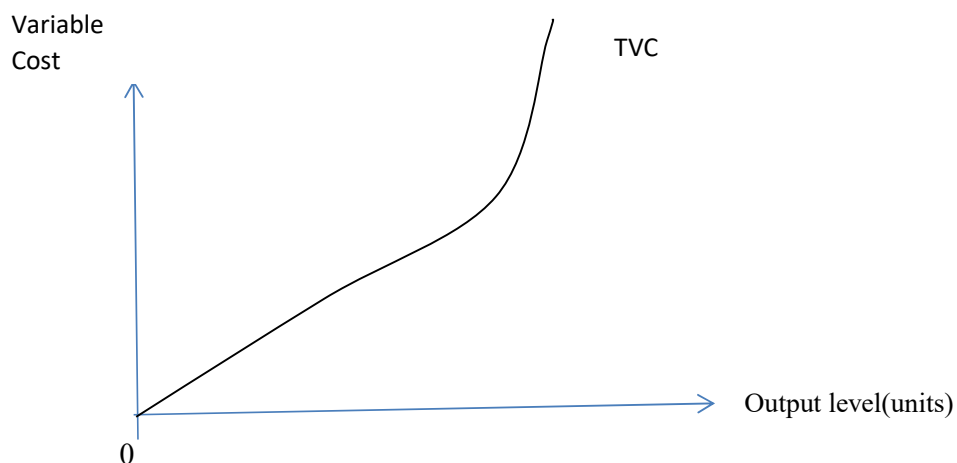
$$AFC = \frac{TFC}{Q}$$

- Average fixed cost is gradually diminishing when the production level increases, but not equal to zero. Because of this, the shape of average fixed cost curve gets a rectangular hyperbola shape.
- It is happening because always total fixed cost gets the same value when average fixed cost is multiplied by output level.
- An average fixed cost curve which depicts above characteristics is given below.

Q	TFC	AFC
100	50	0.5
200	50	0.25
300	50	0.167
400	50	0.125



- The cost made for variable factor such as labour, rawmaterials, fuel and electricity used in production process are known as variable cost.
- The total variable cost within short run cost of production changing with the output level.
- Because variable inputs are not needed at zero output level total variable cost will be level zero and when output level increases variable cost also increases.
- When output increase the rate of increase in variable cost differs among various output levels.
- According to this the variable cost gets zero value at output level zero, and it increases at a low rate in a lower output level and increases at higher rate in a high output level.

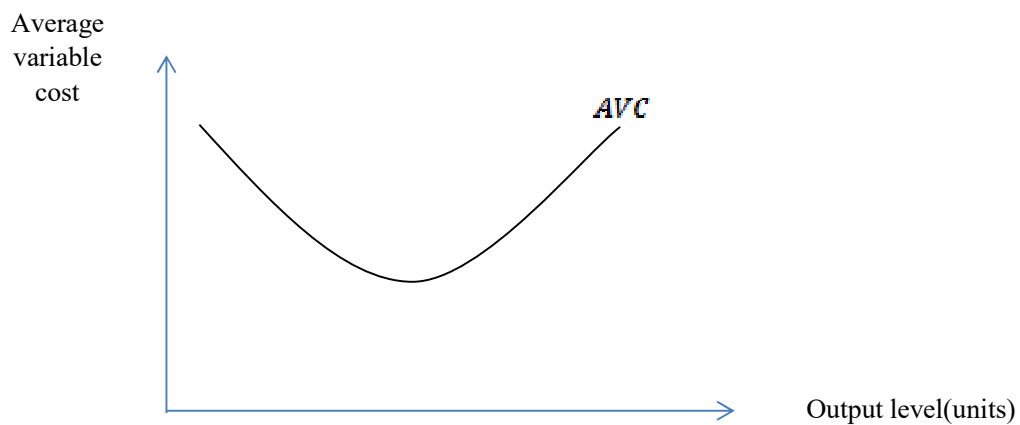


- The variable cost per one unit is known as average variable cost.
- The average variable cost can be calculated by dividing the total variable cost by output level.

$$\text{Average variable Cost} = \frac{\text{Total Variable Cost}}{\text{Output Level}}$$

$$AVC = \frac{TVC}{Q}$$

- The average variable cost curve “U” shaped.

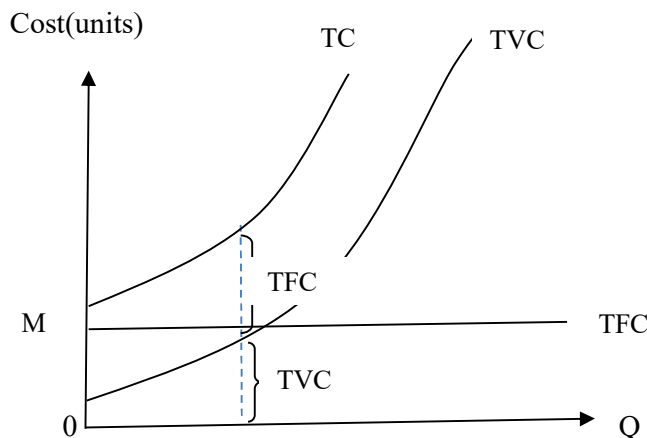


- The total expenditure made for total variable inputs and total fixed inputs within production process is known as total cost(TC).

Total Cost = Total Variable cost + Total fixed cost

TC = TFC + TVC

- Although the output level is zero a total cost exist. Because ,at zero output level although total variable cost is zero there is a fixed cost.
- Because of this total cost curve begins at the point where fixed cost begins.
- As output level increases, the total cost increases at a low rate at lower output level and increases at a high rate at higger output level.
- During shortrun production process as only total variable cost change while keeping fixed cost constant, total cost change due to a change in total variable cost.
- Therefore the shape of the total cost curve will be slimilar to the shape of the total variable cost curve.
- The following graph presents the way of adjusting the total cost with output and how total fixed cost and total variable cost relates to total cost.



- According to the above graph O –M shows the total fixed cost.
- The total cost curve beginning from the point “M” because the total fixed cost is added to total variable cost which is zero at the beginning of the production.

- According to this, vertical distance between TC and TVC are equal to the value of TFC.
- The Tc curve is obtained by adding the value of TVC to the vertical distance of TC and TVC.

According to above diagram

$$b - c = TVC$$

$$b - a = TFC$$

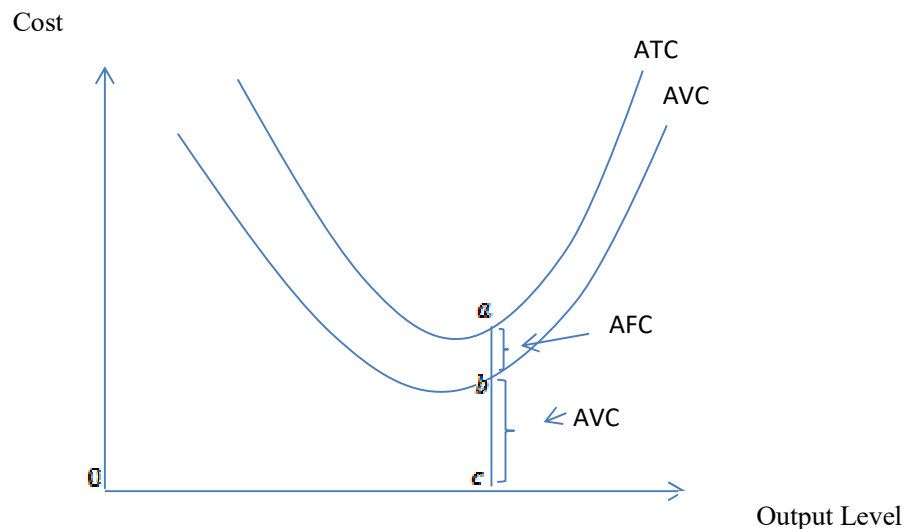
$$b - c + b - a = TC$$

- The total cost per unit is called average total cost

$$\text{Average Total Cost} = \frac{\text{Total Cost}}{\text{Output Level}}$$

$$ATC = \frac{TC}{q}$$

- when the output increases the average total cost decrease gradually and then increase
- The shape of the average total cost curve is also “U” shaped.
- The average total cost curve always lies above the average variable cost curve. It is shown by diagram below.



- The vertical distance between a –b shows the average fixed cost

- The average fixed cost is gradually decreases but not equal to zero. When the output increases average total cost curve gets closer to the average variable cost curve, but it would never fall over the average variable cost curve.
- The minimum point of the average total cost curve is situated above the minimum point of average variable cost due to the fact that total cost is constructed with the sum of average fixed and average variable cost.
- The additional to total cost, when the output is increased by one unit is called marginal cost.

$$\text{Marginal Cost} = \frac{\text{Change in total cost}}{\text{Change in output}}$$

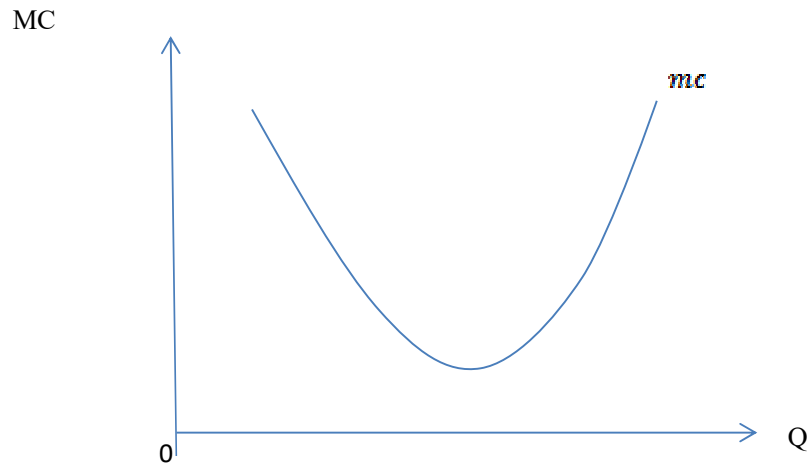
$$MC = \frac{\Delta TC}{\Delta Q}$$

Ex :

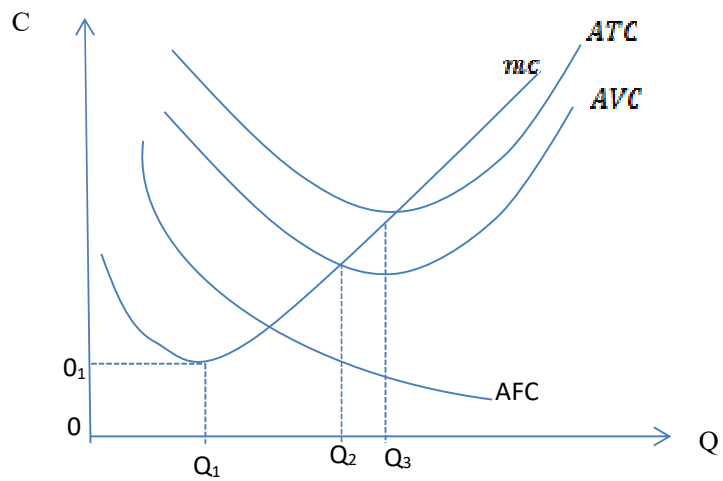
Output (<i>Q</i>) (Units)	Total cost (<i>TC</i>) (Rs.)
100 > 100	500 > 1000
200	1500

$$\text{Marginal Cost} = \frac{1000}{100} = \text{Rs. } 10$$

- In the short run, when the output increases the marginal cost decreases gradually and again increases.
- Marginal cost curve is also normally “U” shaped. It can be shown by the following graph.



- Behaviours of marginal cost and average cost curves related to short run production process are shown by the diagram below.



According to the above graph

- Marginal cost curve goes upward at an increasing rate by crossing the minimum points of the average total cost curve and average variable cost curve.
- The average fixed cost curve goes downward through the average total cost curve and average variable cost curve and to the left of the minimum point of average variable cost.

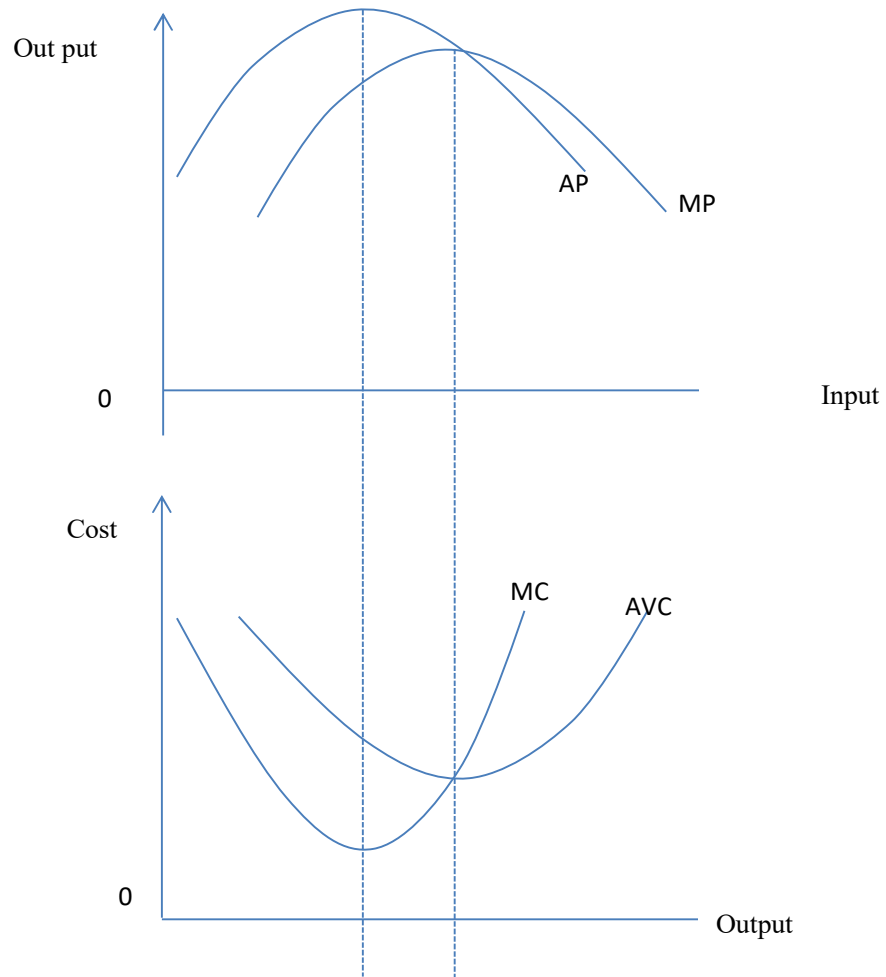
- The output level where marginal cost will be minimized is Q1. In that situation the marginal cost is PO.
- Q2 Point shows the minimum point of the average variable cost and Q3 shows the minimum point of average total cost.
- The elements of short run production cost can also be presented by a sheduele as below,

Output	TFC	TVC	TC	AFC	AVC	ATC	MC
0	40	0	40.00	0	0		
1	40	40'00	80.00	40.00	40.00	80.00	40
2	40	70'00	110.00	20.00	35.00	55.00	30
3	40	92.00	132.00	13.33	30.67	44.00	22
4	40	107.00	147.00	10.00	26.75	36.75	15
5	40	117.00	157.00	8.00	23.40	31.40	10
6	40	127.00	167.00	6.67	21.16	27.82	10
7	40	142.00	182.00	5.71	20.29	26.00	15
8	40	164.00	204.00	5.00	20.50	25.50	22
9	40	194.00	234.00	4.44	21.56	26.00	30
10	40	234.00	274.00	4.00	23.40	27.40	40

(Should do excercises on how to calculate above mentioned concepts and should observe relationship among cost curves while drawing them)

- The short run cost curves are demonstration the Law of Diminishing Marginal Returns.
- Marginal cost decreases when marginal product of the variable factor increases while price of the variable factor remains constant.
- When marginal product begins to diminish, the marginal cost will also begin to increase.
- Because of this, shortrun marginal cost curve will be a miror image of marginal product curve.
- The average variable cost curve is also remains as a reflection of the average product curve following diminishing marginal returns.

- A relationships between cost curves and product curves are shown by the diagram below,

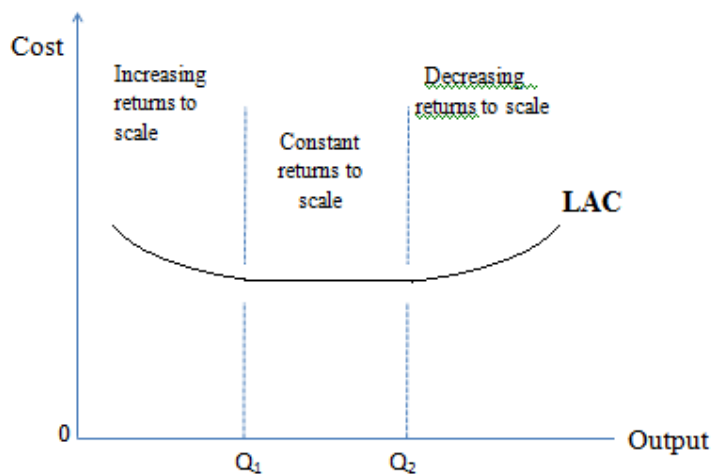


According to the above graph,

- MC is minimized when MP is maximized
- AVC is minimized when AP maximized
- MP Curve goes down ward of an increasing rate by crossing the maximum point of the AP curve

- All inputs become variable inputs in the long run .

- There is no barrier in the long run that affects to increase production.
- Accordingly, all production firms reach a flexible situation in long run.
- Similarly production firms can change its production capacity as necessary.
- Due to the expansion of production capacity during long run economies of scale and diseconomies of scale arises.
- Absence of economies of scale or diseconomies of scale leads to constant returns to scale.
- Increasing returns to scale arises with economies of scale and decreasing returns to scale arises with diseconomies of scale.
- The long run average cost curve of a production firm which face economies of scale and diseconomies of scale “U” shaped with a flat bottom.



- Economies of scale is the decrease in average cost when expanding the production in long run. (Cost per unit)
- Economies of scale can be defined as a financial benefit which can be obtained with decrease in the price of inputs and increase in efficiency of production factors due to increasing the production capacity.
- In the above diagram the average cost decreases up to Q_1 and it is the stage of economies of scale. Increasing returns to scale exit in that area.
- The determinants of economies of scale are given below,
 1. Technology efficiencies
 2. Manageral efficiencies

3. Marketing efficiencies
 4. Financial efficiencies
 5. Risk bearing efficiencies
- Decreasing in the cost per unit (average cost) when expanding production is known as diseconomies of scale.
 - It is the financial loss occurred with decreasing in the efficiency of production factors along with the expansion of production capacity.
 - According to above diagram after Q_2 level of output it can be seen an increase in longrun average cost and it is the area with diseconomies of scale. Decreasing returns to scale exist in that area.
 - Factors affect diseconomies of scale are as follows.
 1. Technology inefficiencies
 2. Managerial inefficiencies
 3. Marketing inefficiencies
 4. Financial inefficiencies
 5. Risk bearing inefficiencies
 - Average cost remains constant in the area where there is no economies of scale or diseconomies of scale. That is the area with constant returns to scale.
 - The gap between $Q_1 - Q_2$ shows the constant returns to scale in the above graph.

Competency Level 4.4 : Compares basic features of the market structures.

Number of periods: 08

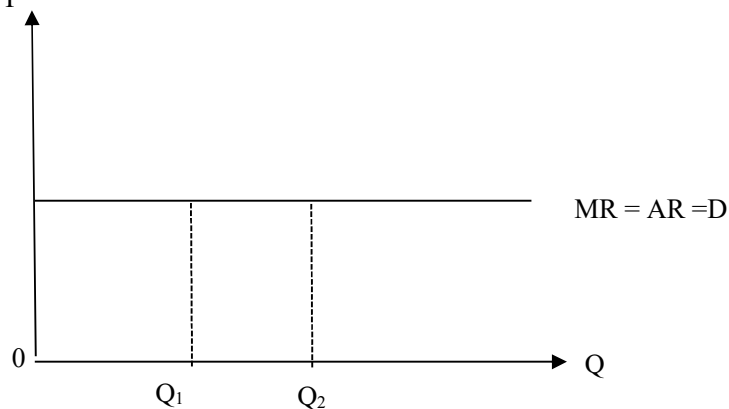
Expected Learnings Outcomes:

- Names market structures.
- Explains the basic characteristics of the Perfect competition.
- Explains the basic characteristics of a Monopoly.
- Explains the basic characteristics of Monopolistic competition.
- Explains the basic characteristics of Oligopoly.
- Compares the basic characteristics of market structures.

A Guidelines to Explain the Subject Matters:

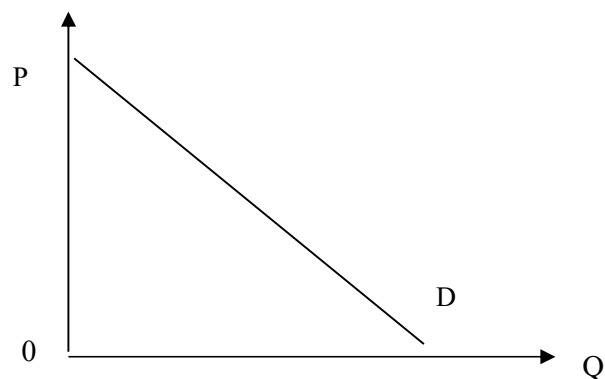
- The total of firms which produce goods or services can be known as industry.
- The goods and services produced by a firm sell, at various market situations and to define those market situations it is used the concept of market structure.
- There are various market structures in the practical world.
- Following factors affect the various market structures :
 1. Number of firms in the market
 2. Homogeneity of the product
 3. Ability to enter the market and exit from the market
 4. The nature of the competition among the firms in the market.
- Market structures can be categorized as below.
 - Perfect competition
 - Monopoly
 - Monopolistic Competition
 - Oligopoly
- Market situation that has a large number of firms selling homogenous products with free entry and free exit is known as perfect competition.
- Some characteristics of perfect competition are as follows.

- Homogenous products
 - Large number of sellers and buyers
 - A Firm is a price taker
 - Free Entrance and Exit
 - There is perfect information
 - There are no barriers to mobility of factors
 - Obtained only normal profit in long runs by all firms at the market.
- The meaning of the homogenous product is that all production firms produce similar products and the products which are substitutable to each other..
 - Buyers cannot see any difference of the product of any firm in which they buy..
 - There is no effect over the market from one individual buyer or seller as there are large number of buyers and sellers within the market.
 - A Buyer or seller cannot change the demand or supply of the market.
 - A perfect competition firm cannot determine the price of goods and can supply any quantity for the determined price.
 - Because one firm cannot affect the market price and any quantity can be supplied at that market price they are known as price takers.
 - The perfectly competitive firm as a price taker because the firms supplies a small quantity and produces homogenous goods.
 - Due to this demand curve of a perfectly competitive firm, is parallel to the horizontal axis.



- Special characteristic of a perfectly competitive firm is free entrance and free exit.
- The meaning of free entrance is that there is no barrier for new firms to enter the market.
- The meaning of free exit means that there is no barrier for new firms to exit from the market.
- Another special of perfect competition is that the ability to obtain information without any cost.
- The meaning of this is that the buyers know the price and quantity supplied.
- If a seller increases the price of the goods buyers shift to other sellers who are selling at a low price.
- Another special characteristic is that the possibility to move factors between industries.
- A perfectly competitive firm would earn super normal profit during short run.
- As a result of that supply increases and price will decrease.
- Because of this, in the long run perfectly competitive firms can earn only normal profit.
- The close examples for perfect competition firms can be given as below,
Paddy, pumpkin, carrot, corn
- The market which has one firm is known as the monopoly market.
- This is opposite to the perfect competition.
- Both firm and industry is same in monopoly market.
- There are some distinguishing features of the monopoly market.

- Unique product
 - Only one firm is engaged in the production
 - Barriers to entry and exit
 - Imperfect information and inability to obtain information without a cost
- There is no close substitutes for goods which sell at in the monopoly market.
 - The product can be bought by one firm and there is no firm that produce the same goods in the market. Because of that producer receives in a monopoly power within the market.
 - Because of this the consumer can not choose and consumer has to buy or give up the purchasing.
 - Because of this uniqueness, the firm can affect the price.
 - The demand curve of a firm at monopoly market slopes down ward from left to right because the of its ability to change the price.



Demand curve of a firm at monopoly market

- There is no competition in a monopoly market because there is one firm and it has the monopoly power.

- It is very difficult for a new firm enter to the monopoly market.
- There are natural or artificial of barriers which prevent entering of new firm of the monopoly market.
 1. Ownership of the main raw materials
 2. Legal barriers of government
 3. Economies of the scales
- There are situation where the ownership of main raw materials are owned by one firm.
- As an example, because ownership of gem mines belongs to one firm monopoly situation is created for the products produced using those and as a result new firms cannot enter the market to produce such products
- Government performance also prevents the entering of new firms and would be occurred the monopoly situations.
- There are some situations, where there is some businesses owned by a firm and some businesses done by the government.

Ex : Railway authority, providing electricity board

Entering of new firms also prevented with economies of sale

- In long runs there would occur economies of scale when engage in production by changing the inputs.
- When there are economies of scale, the average cost is decreased and the firm could increase the production also.
- The goods would be sold at a low prices because of this low cost.
- This situation is considered as a naturally monopoly and crating of such a situation also prevent entering of new firms.
- When there is a natural monopoly, firms can increases production at low at low cost and sell at low price and as a result it would be difficult for new firms to compete with the existing firm.

- In a monopoly market information relevant to production cannot be obtained by another producer without any cost.

Example : Demand information of a product prices, profit, cost of the product, and technology cannot be obtained by other firms.

- Without this information a new firm cannot enter the market.
- The market situation which consists of a large number of firms and where there are no barriers to enter the industry is known as monopolistic competition firms.
- In monopolistic competition firms have characteristics of both monopoly and perfect competition.
- Therefore monopolistic competition is considered as combination of monopoly and perfect completion.
- The product differentiation can be seen in monopolistic competition.
- Due to this monopolistic competition differs from perfect competition.
- The monopolistic competition market was introduced in 1930 by the economist “Edward Wambalin” .
- This monopolistic competition market is common in practical world.
- There are some characteristics of the monopolistic competition.
 - Existence of large number of firms with in the industry.
 - Each firm produce a differentiated good.
 - There are no barriers to enter and exit from the market.
 - The firm’s demand curve slopes downward.
 - There are no barriers for factor mobility.
 - Monopolistically competitive firms earn only normal profits in the long run.
- Because there is a large number of firms in Monopolistically competitive market similar to perfect competition each firm follows an independent price policy.

- Because there is a large number of firms in the market one firm owns a small share of the market supply.
- Because of this one firm cannot influence over the other firms production.
- If the firms produce the same goods within this market, there would be difference among each firm's product .
- Example : If all firms produce soap it has a difference each other.
- Because of this the goods produced by monopolistically competitive firms will not be a perfect substitute for another good and it is the meaning of differentiation of goods.
- There would be competition between firms because of this product differentiation.
- The following factors would be used for creating competition among firms.
 - Quality of the goods (Shape, durability trustworthiness consumer services)
 - Price of the goods
 - Marketing
- The monopolistically competitive firms can change the price of goods because the consumers have confidence that the goods have differences although they look similar of a monopolistically competitive firm.
- Because of this, the demand curve of a monopolistically competitive firm from left to right.
- Similar to perfect competition monopolistically competitive firm has free entrance to the industry and free exit from it.
- A monopolistically competitive firm can earn super normal profit in short run. However due to entry of new firms to the industry they will earn only normal profits in long run.
- Examples for monopolistic competition of new firms to the industry they will earn only normal profit in long run.
 - Canteen
 - Groceries
 - Saloons
 - Tooth paste
 - Shoes

- Soap
- If there is small number of firms in the market it can be defined as oligopoly market.
- The characteristics of that market can be given as follows,
 - Limited number of firm.
 - Mutual understanding between firms
 - Producing of either differentiated or homogeneous products
 - Firm's demand curve is downward sloping and also it is relatively
 - There are natural or artificial barriers which prevent entering of new firms to the industry some of the barriers are as follows,
 - Legal factors
 - Existence of economies of scale
 - Large introductory capital.
 - Administration of raw materials by several firms.
- Because of these barriers it will be difficult for a to act within the market.
- The share which is owned by one firm is large because of the limitation of the firm.
- There are inter – relationships between firms because all firms own a large share of the market.
- The policies of one firm affects other firms directly and all firms see the performance of other firms clearly.
- Every firm react to each other in an intention of competing.
- As an example, If one firm reduces the price of the goods that may decrease the profit of other firms by decreasing the demand of those firms. Then those firms will also reduce the price. As a result the firm which reduced price first will face a risk situation therefore they continue an inter – relationship among each other.
- Example for oligopoly market are news papers, television channels, cement industries and commercial banks
- The goods which are produced by oligopoly firms are homogenous or differentiated.

- They can affect the price, because one firm owns a large share of market supply.
- Because of this demand curve slopes from left to right,
- As other firms react when a firm changes the price of goods. Quantity demand of the firm will be indefinite . Because of this firm has a kinked demand curve.
- The features of the above market structures can be summarized comparatively by a schedule as follows.

Nature of the market	Number of firms	Entry to the market	Nature of product	Examples	Demand curve of the firm
Perfect competition	Very large	No barriers (Free entry)	Homogenous goods	Paddy , Corn carrot, pumpkin	Parallel to the horizontal line price taker
Monopoly	One firm	Barriers	special goods	Railway service, water supply , Electricity supply	Slope downward price maker.
Monopolistic competitive	Large	No Barriers	heterogeneous goods	canteen, grocery, saloon	Slope down ward - can affect the price - comparatively - elastic demand
Oligopoly	Few firms	Barriers	Heterogeneous or homogenous goods	News papers Television, channels commercials bank, gas, soap	Slope down ward - can effect to the price - comparatively in elastic demand

Competency Level 4.5 : Investigates the short run behaviour of a perfectly competitive firm and industry.

Number of periods : 10

Expected Learnings Outcomes:

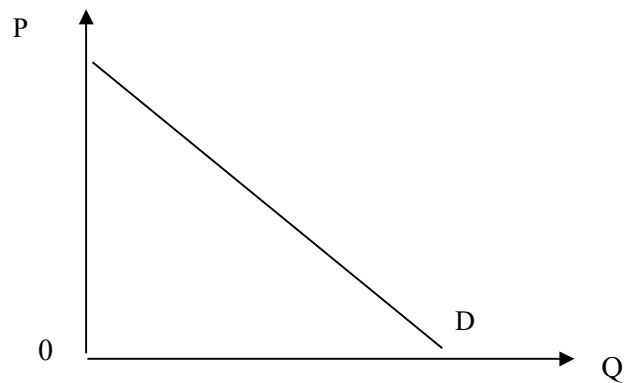
- Introduces firm's and industry's demand curves of perfect competition separately.
- Explains, the relationship between firm's demand curve and industry's demand curve with graphs.
- Names basic approaches of profit maximization of a firm.
- Analyses the Total cost and Total revenue approach with statistical schedules and graphs.
- Analyses the marginal cost and marginal revenue approach with schedules and graphs .
- Analyses, the short run behaviour of a perfectly competitive firms with schedules and graphs.
- Presents abnormal profits, normal profits and incurring losses and shut down point of perfectly competitive firm through graphs.
- Analyses, the behaviour of short run supply curve of a firm using graphs.
- Analyses the equilibrium of the perfect competitive market using the market supply curve and demand curve.

A Guidelines to Explain the Subject Matters:

- A perfectly competitive firm is considered as a price taker because they produce homogenous goods and produce a very small quantity from the total supply of the market.
- The demand curve lies as a linear line parallel to the horizontal axis because they can sell any quantity at market price without affecting it.

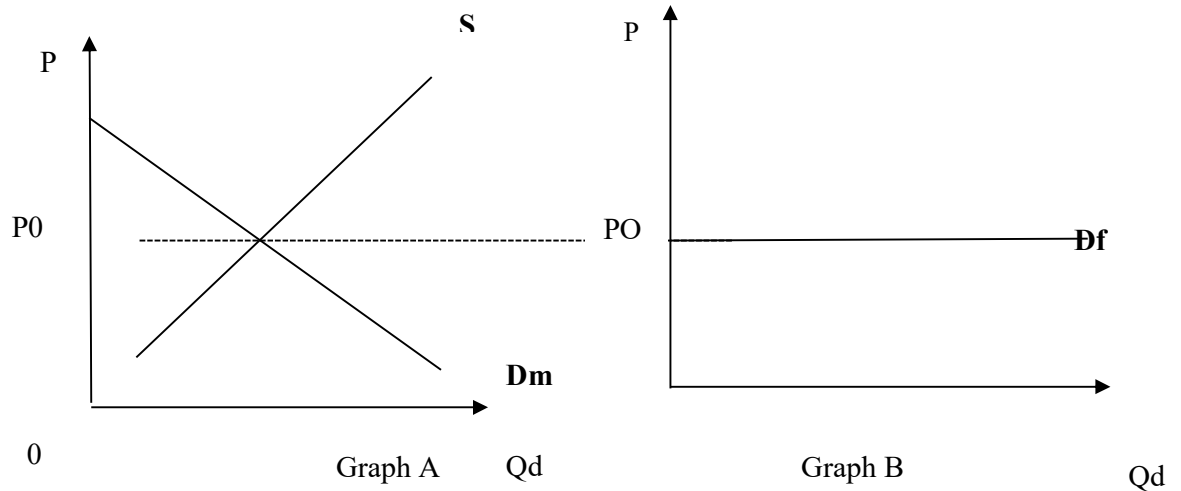


- Perfectly competitive industry can determine the price although a firm act as a price taker.
- That's why, the demand curve of the perfectly competitive industry slopes downward from left to right.



The demand curve of the market.

- There is a relationship between the demand curve of the perfect competitive industry and the market.
- That can be illustrated as below,



The relationship between perfectly competitive industry's demand industry curve and firm's demand curve

- According to the above graph A, Dm curve shows the industry demand curve and SM curve shows the industry supply curve.
- Equilibrium price determined at the industry is P0
- Firms can sell the product at price P0. Accordingly firms' demand curve is perfectly elastic and it is shown by the curve Df in the graph.
- The price of the firm changes, only if industry supply or industry demand changes.
- If the industry demand increases while supply remains constant, the price received by firms will also increase.
- A perfectly competitive firm would face two constraints in short run.
 1. Should act as a price taker
 2. Should operate on existing technology and capacity of the firm
- When the firm works on two these constraints the firm has to make two important decisions
 1. whether they remain in the production or shutdown the firm.
 2. If they decide to remain in production how much is going to be produced.
- If they decide to remain in the market without closing down the firm, two approaches can be used to decide the optimum output of the firm.
 1. Total revenue = Total cost approach
 2. Marginal revenue = Marginal cost approach

- Calculating the economic profit by total revenue and total cost to select the output with maximum profit as the optimum output is called as TR and TC approach.
- The total revenue can be calculated as below,

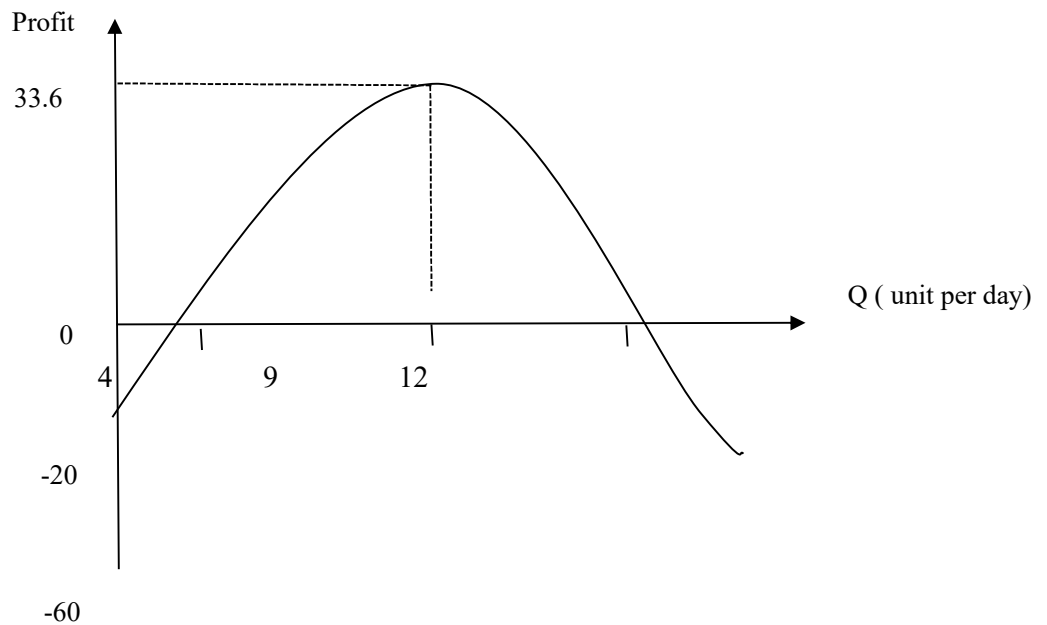
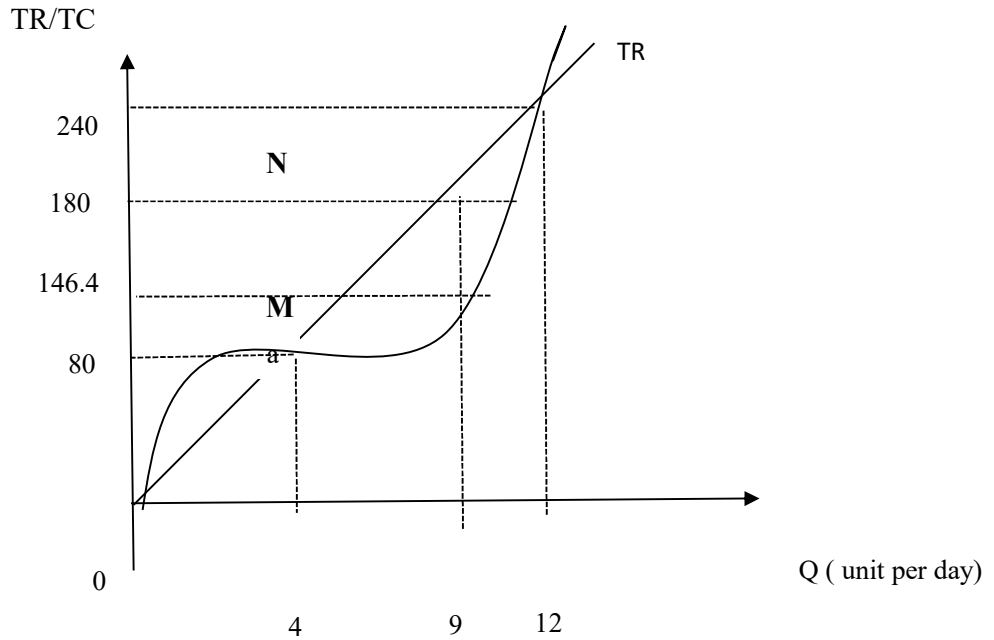
$$\text{Total Revenue} = \text{Price of the goods} \times \text{Quantity}$$

$$\text{TR} = \text{P} \times \text{Q}$$

- Sum of the total variable cost and total fixed cost equals total cost.
- The way of obtaining the optimum output using total revenue and total cost approach can be illustrated by the following schedule.

Product (Unit per day)	Total Revenue	Total Cost	Economic Profit
0	0	20	-20
1	20	36.8	-16.8
2	40	52.8	-12.8
3	60	68.0	-8.0
4	80	80.0	0
5	100	90.4	9.6
6	120	101.6	18.4
7	140	114.4	25.6
8	160	128.0	32.0
9	180	146.4	24.0
10	200	168.0	0
11	220	196.0	-28.0
12	240	240.0	-60.0
13	260	260.0	
14	280	280.0	

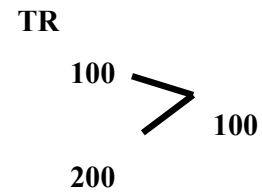
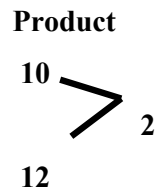
- According to the above example, price of a unit determined at the market is considered as Rs. 20/-.
- The profit taken, the total cost reduced from the total revenue and the maximum profit is 33.60.
- Accordingly, the output level of a which has maximum point of profit is taken as the optimum output 9.
- The above details can be illustrated by a graph as below,



- According to the above graph the TC curves intersect total revenue curve at points A and B. Accordingly in A and B points the economics profit will be zero.
- At the bottom of point A, the total cost curve goes above the total revenue curve. In that area also economic profit value is minus.
- At the above of point B the total cost curve goes above the total revenue.
- Therefore, in that area also economic profit will be zero.
- Between the points A and B the total cost curve goes below the total revenue curve.
- Because of this area between A and B is an area of economic profits.
- Perfectly competitive firm selects the area with maximum profit as its optimum output level.
- The vertical distance between N-M shows the maximum profit, accordingly the maximum profit is 33.60.
- Accordingly the point with 9 units which has maximum profit is selected as the optimum output in short run.
- In Marginal Revenue and Marginal Cost approach calculated based on firm's e Marginal Revenue and Marginal Cost. Accordingly the output level which equal marginal revenue to marginal cost is selected as the optimum output level.
- When increasing the output level by one unit, the amount added to the total revenue is called marginal revenue.

$$\text{Marginal revenue} = \frac{\text{Change in Total Revenue}}{\text{Change in output level}}$$

$$MR = \frac{\Delta TR}{\Delta Q}$$



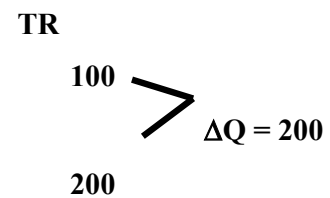
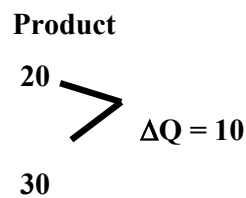
$$MR = \frac{100}{2}$$

$$= \text{Rs.50.00}$$

- When increasing the production by one unit the amount added to the total cost is called marginal cost.

Marginal Cost= $\frac{\text{Change in Total Cost}}{\text{Change in Production level}}$

$$MR = \frac{\Delta TR}{\Delta Q}$$



$$MC = \frac{250}{10}$$

$$= \text{Rs.20.00}$$

- The marginal revenue and average revenue is equal to the price at perfect competition as they act as price takers.
- This can be proved by the following schedule.

Quantity(Q)	Price(P)	Total Revenue (TR)	Average Revenue (AR)	Marginal Revenue (MR)
0	25	0	0	-
1	25	25	25	25
2	25	50	25	25
3	25	75	25	25
4	25	100	25	25
5	25	125	25	25

- Because the price is constant as Rs.25 that is equal to the average and marginal cost.
- In a perfectly competitive firm the price, average revenue, and marginal revenue are equal to each other it can be shown by a graph as below.

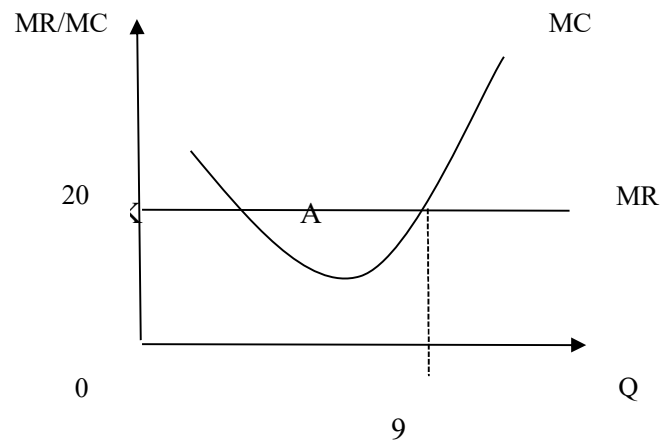


- In short run the optimum production level when MR is equal to MC can be shown as below by schedule and a graph.

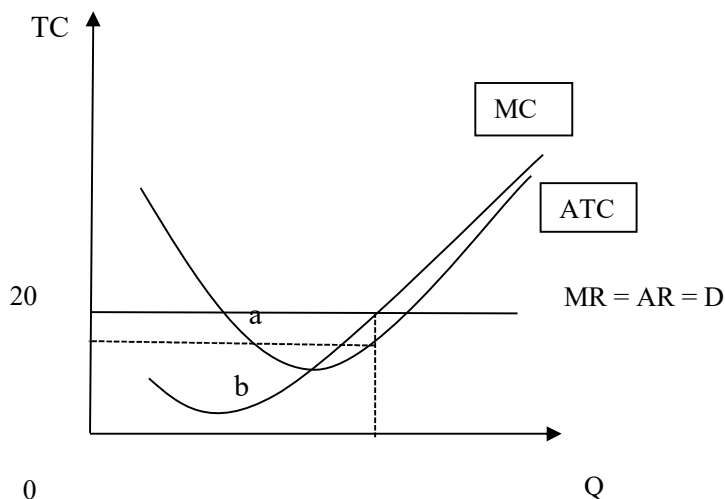
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Q	TR	TC	MR	MC	TR - TC
6	120	101'6		12'8	18'4
7	140	114'4	20	13'6	25'6
8	160	128'0	20	18'4	32'0
9	180	146'4	20	20	33'6
10	200	168'0	20	21'6	32'0
11	220	196	20	28'0	24'0

- According to the data of the schedule in unit 9, the profit is maximized at that situation $MR = MC$
- As a result perfectly competitive firm selects that point as optimum output level by satisfying the condition of $MR = MC$. It can be shown by a graph as below,



- According to the above graph in point A $MR = MC$, and at that situation of output level 9 economic profit will also be maximized.
- According to the graph although the condition of $MR = MC$ is satisfied in point K that point would not be selected as the optimum output level.
- The reason for that is the output level relevant to point K firm would not earn any profit. If output expands profit will also expand.
- Fulfilling only the condition of marginal revenue equals marginal cost will not be sufficient to achieve profits. For this another condition should be fulfilled. Which means at the point marginal revenue equals marginal cost, marginal cost curve should cut marginal revenue curve where marginal cost is increasing.
- There are alternative situations that perfectly competitive firm face in short run.
 1. Continues the production with super normal profit (Abnormal)
 2. Continues the production with normal profit (zero economic profit Zero)
 3. Continues the production with losses.
 4. Closing down of the firm.
- When a perfectly competitive firm earns economic profit, the price will exceed the average cost and the total revenue will exceed to the total cost.
- The graph below shows situation of the super normal profit.



- According to the above graph, point “a” is the equilibrium of the firm and the production level is 9.
- At that situation the perfectly competitive firm’s total revenue, total cost, and the economic profit is as below,

$$\text{Total Revenue} = \text{average Revenue} \times \text{Production level}$$

$$\text{TR} = \text{AR} \times \text{Q}$$

$$\text{TR} = 20 \times 9$$

$$\text{TR} = \text{Rs. } 80$$

$$\text{Total Cost} = \text{Average cost} \times \text{Production level}$$

$$\text{TC} = \text{ATC} \times \text{Q}$$

$$\text{TC} = 12 \times 9$$

$$\text{TC} = \text{Rs.}108$$

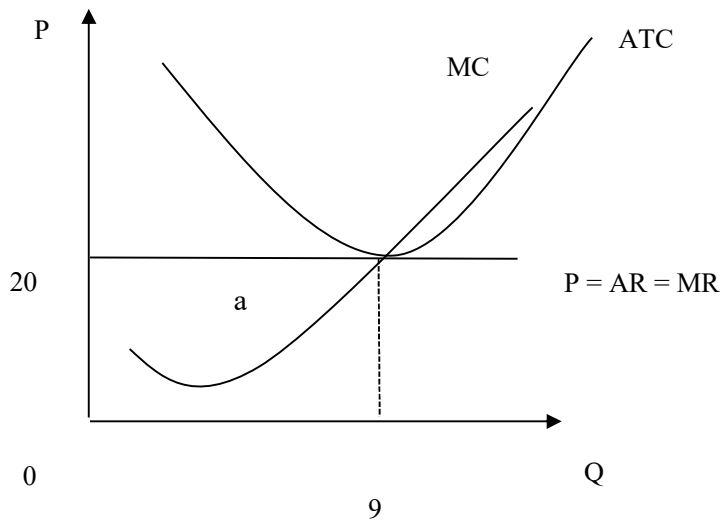
$$\text{Economic profit} = \text{Total Revenue} - \text{Total cost}$$

$$= \text{TR} - \text{TC}$$

$$= 180 - 108$$

$$= \text{Rs.}72$$

- The situation where a perfectly competitive firm is earning normal profit the total cost is equal to total revenue.
- The normal profit situation can be shown as below,



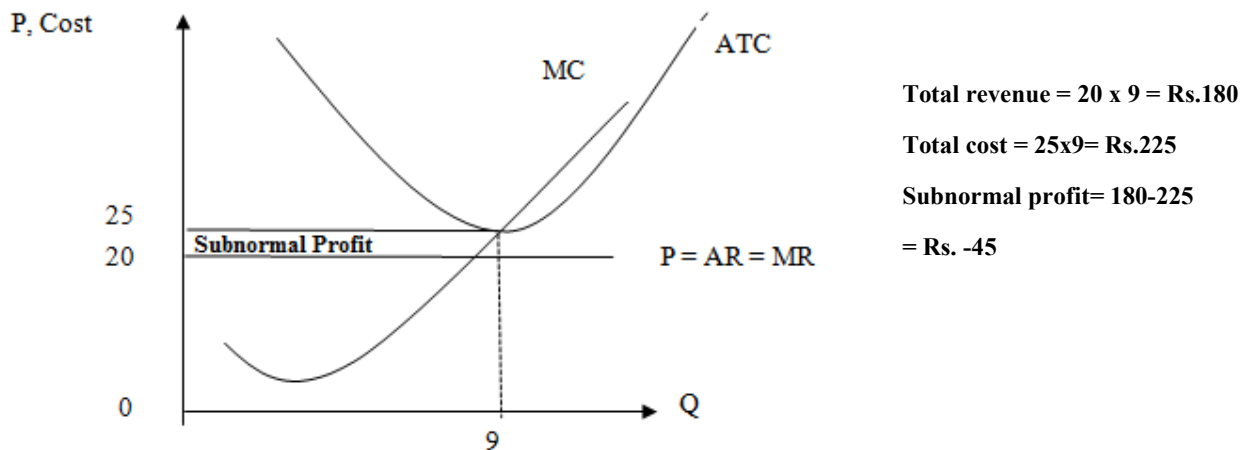
- The above graph shows the equilibrium at point *a* and the relevant output level is 9.
- Given below are the total cost, Total revenue and the economic profit of the firm,

$$\begin{aligned} \text{Total Revenue} &= 20 \times 9 \\ &= \text{Rs. 180} \end{aligned}$$

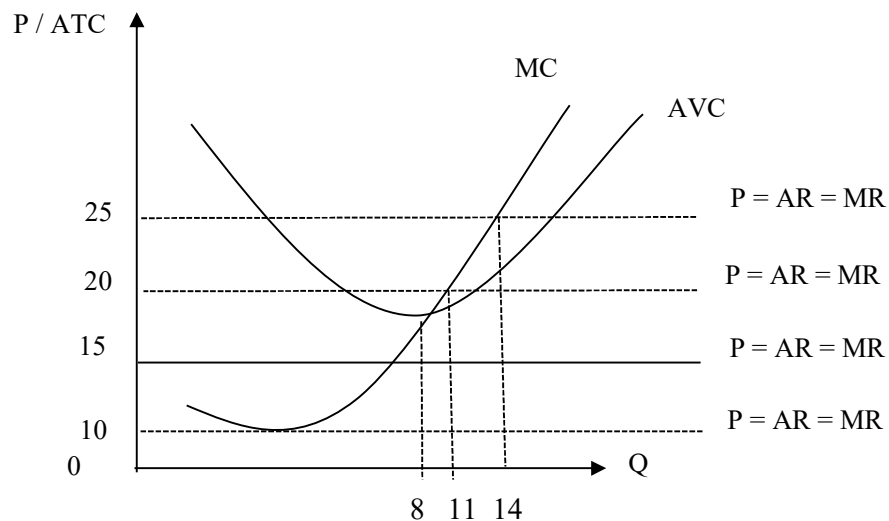
$$\begin{aligned} \text{Total Cost} &= 20 \times 9 \\ &= \text{Rs.180} \end{aligned}$$

$$\begin{aligned} \text{Economic profit} &= 180 - 180 \\ &= 0 \end{aligned}$$

- When the average cost is greater than the price the firm has to face a loss . In this situation as the total cost is greater than the total revenue, firm earns subnormal profit.
- The following graph shows the subnormal profit of a firm.



- The shaded part of the graph shows the loss of the firm.
- Even where there is subnormal profit in short run a decision can be made not to shutdown the firm but to keep it at a production unit. This decision is made if some of the loss can be covered by continuing production.
- In a short run, although the total fixed cost must be incurred total variable cost can be avoided.
- Although the firm cannot cover the total fixed cost, if they can cover the total variable cost with the total revenue even if it incur losses the firm will remain in production It can be seen in the following graph.

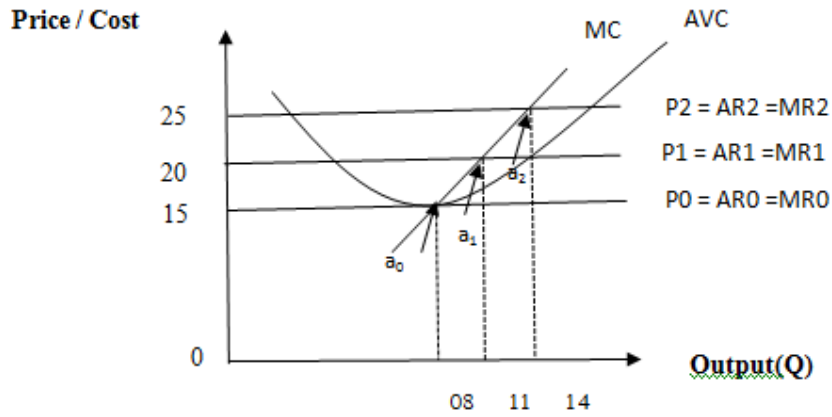


- According to the above example in the situation of equilibrium point a, the total revenue is enough to cover the total variable cost.

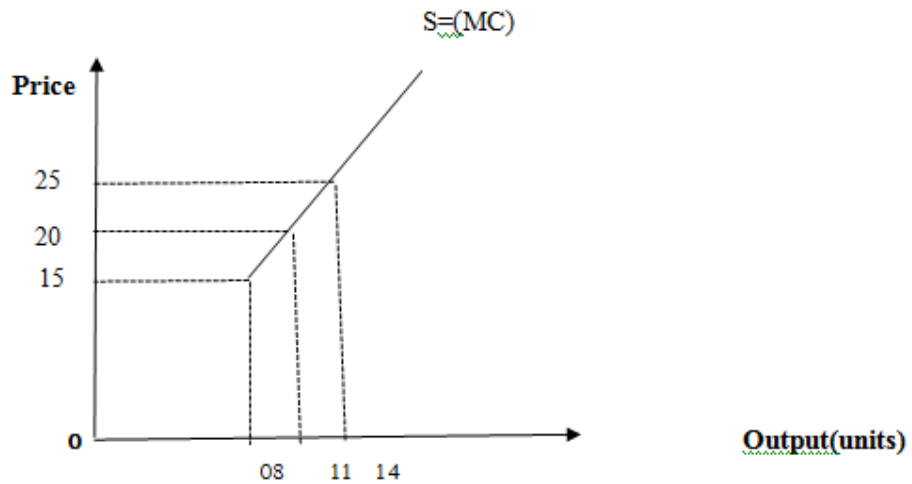
$$\begin{aligned} \text{In point "A" Total revenue} &= 15 \times 08 \\ &= \text{Rs. 120} \end{aligned}$$

$$\begin{aligned} \text{In point A total variable cost} &= 15 \times 08 \\ &= \text{Rs. 120} \end{aligned}$$

- At point "B" even if loss was incurred the total variable cost is lower than the total revenue.
- At point "b" the total cost $= 20 \times 11 = \text{Rs. 220}$
- At point "b" the total variable cost $= 17 \times 11 = \text{Rs. 187}$
- At point "B" after covering the total variable cost with the total revenue Rs.55 remained. That balance can use to cover part of the fixed cost . Even if there is a loss in the firm they will continue remain in production.
- According to the above example at point below the point "a" as they cannot cover the total variable cost with the total revenue, it is logical to shut down the firm.
- The total information in the figure shows that the decision whether to remain in production or not depends on point "a" which is the point where price equals to minimum of average variable cost.



- In the above graph at point “a” price is equal to minimum variable cost and the MC curve above is the short run supply curve.
- Accordingly perfectly competitive the firms’ short run supply curve can be shown in a graph as below,



Perfect competition the firms’ short run supply

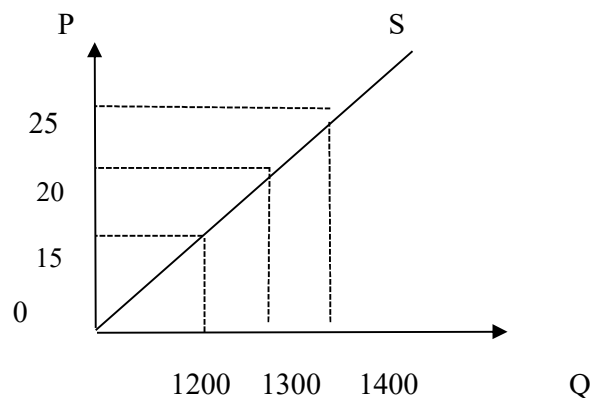
- The equilibrium of the perfectly competitive market is determined at the point where the industry demand curve cuts supply curve.

- The perfectly competitive industry's demand curve is the obtained by adding all the sums of the private demand curves relevant to the product horizontally.
- Accordingly, the demand curve of perfectly competitive market slopes downward from to right.
- The perfectly competitive market supply curve is obtained by the sum of the firms' supply curves horizontally.
- Accordingly, the perfectly competitive market supply curve can be obtained by adding the horizontal sum of all marginal cost curves above the average variable cost.

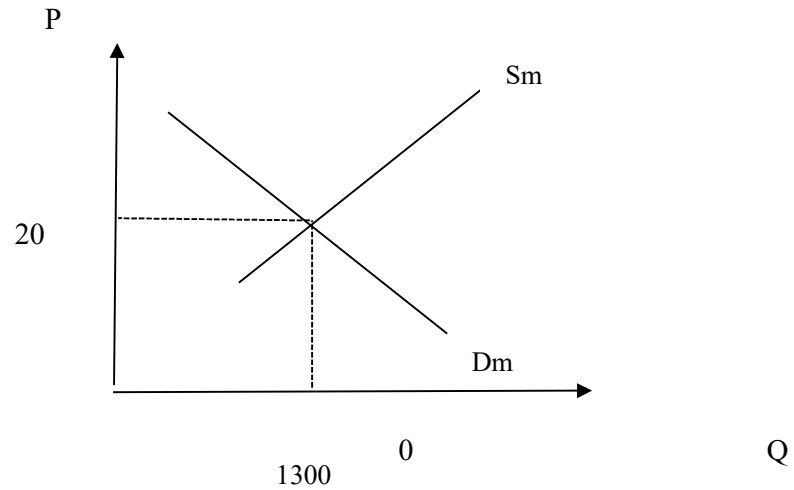
Few example: If there are 100 firms' in a perfectly competitive market, supply details and the relevant market supply curve can be shown as below.

Price(Rs.)	Supply of firm units	Market supply units
15	12	1200
20	13	1300
25	14	1400

- According to the above information market supply curve is as below,



- The way the equilibrium of the perfectly competitive industry is determined based on the supply and demand curves can be shown as below.



- In the graph above the industry's demand is shown as Dm curve and the supply is shown as Sm curve.
- The equilibrium of the industry is determined based on the above demand and supply.
- According to the above example, equilibrium price determined was Rs.20 and quantity is 1300 units.

Competency Level 4.6: Describes the behaviour of the factor market.

Number of periods :08

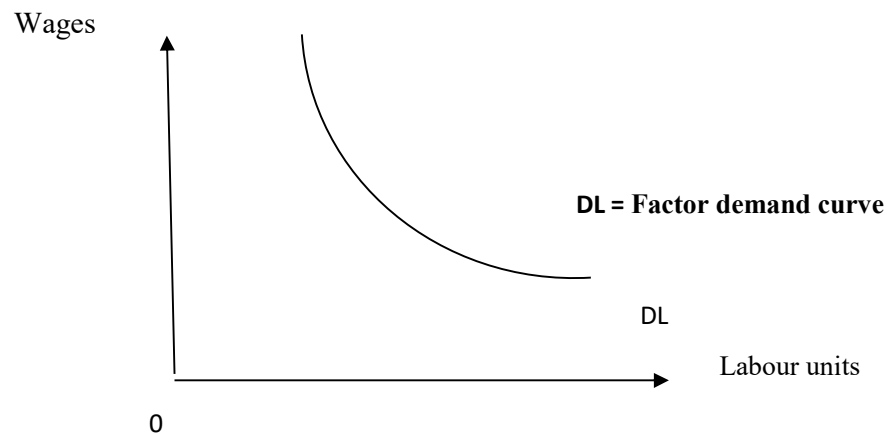
Expected Learnings Outcomes:

- Analyses the factor demand .
- Analyses the factor supply.
- Analyses how factor price is determined.
- Describes earnings of factors.
- Shows transfer earnings and economic rent through demand and supply curves.
- Explains the difference between transfer earnings and economic rent with examples.

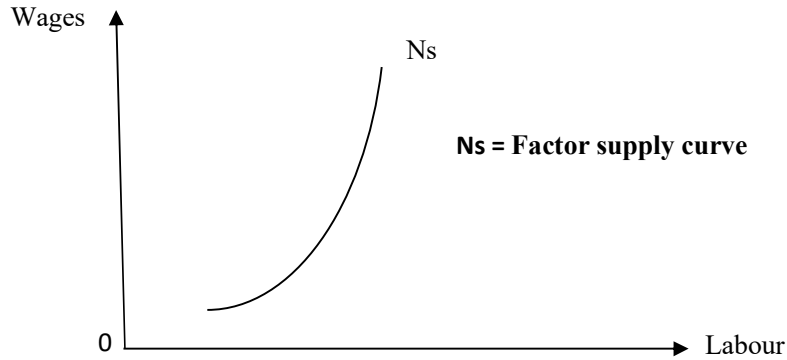
A Guidelines to Explain the Subject Matters:

- The market where factors of production such as land, labour, capital and entrepreneurship are bought and sold is defined as factor market.
- Just as the the price of good is determined according to the demand for and supply of goods in the goods market, The prices of the factor market are determined by the demand and supply of the factor market.
- The factors services are purchased by the firms which produce goods and services and it is the household sector, that come forward to sell factor services.
- The factor demand is dependent on the demand for good and services, produced by making use of these factors. Therefore the demand for production factors is known as derived demand.
- Example
 - Demand for masons depends on the demand for constructions
 - Demand for workers for garments depends on the demand for garments.

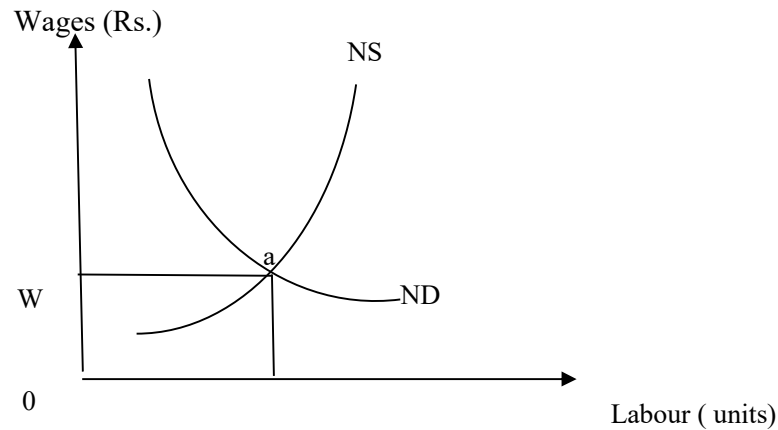
- Demand for computer software programmers depend on the demand for computers.
- Demand for land depends on the demand for agricultural products.
- Production firms demand production factors considering the price of factors(wages, rent, interest and profit)
- If the factor price is high the demand for factors will decrease, and if the factor price is low the demand for factors will be high. Therefore there is an inverse relationship exists between factor price and factor demand.
- Ex : the demand for labour decreases when wages are increased and demand for labour increases when wages are decreased.
- Because of this, the factor demand curve slopes downward from left to right.
- Example: Labour demand curve slopes from left to right as below



- Factor owners also supply factors considering factor price.
- The factor supply increases when the factor price increases and, the factor supply decreases when factor price decreases.
- Example: When the wages increase labourers are willing to supply labour, as wages decrease, there is an inclination to reduce supply of labour
- As a result, the factor supply curve slopes upward from left to right.



- Accordingly, the factor price and equilibrium quantity are determined on the interaction between the factor demand curve and the factor supply curve.



- According to the figure above while point “a” is the labour market equilibrium the equilibrium wages rate is W_1 (Just as the labour demand and supply in the labour market determines the price the other factor also determine its price, based on their demand and supply.)
- The price of a particular factor shows the earnings of that factor.
- The minimum price required by a factor to be maintained in order to keep a particular production factor in the same position is known as transfer earnings.(The minimum to be paid to keep a factor in service is known as transfer earnings.)
- If the factor cannot earn even that minimum price, the factor will not remain in that service but shift to other production processes, from which earnings can be made.

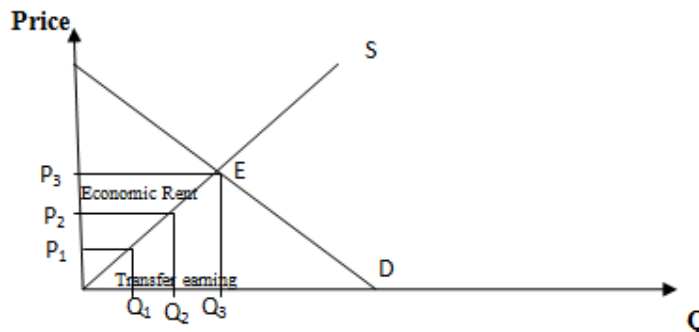
- Accordingly ,therefore to prevent the shifting of the resources from one production to another production the minimum earnings required for a factor is in the transfer earnings.
- Therefore the opportunity cost of present use of a particular factor is shown transfer earnings.
- A certain factor can be maintained in its current position only if the necessary income to bear the opportunity cost is available.
- If an income is earned over and above the minimum payments required to maintain a particular production factor at its present use that surplus income is identified as economic rent.
- It means that if the current earnings of a particular factor is above the transfer earnings, then that exceeded amount is reflected by the economic rent.

Example : Imagine that a person can earn Rs.1000 by his current employment, and from the next job he can earn Rs. 800 per day.

Accordingly, his transfer earning = Rs. 800

Economic Rent = Rs.200

- Transfer earnings and economic rent can be illustrated as below by a graph.

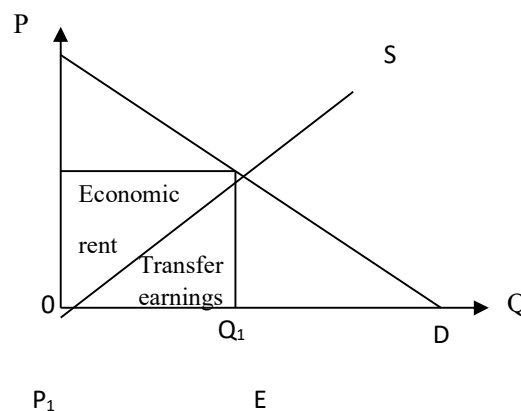


- The minimum price expected by the supplier for each unit supplied in that factor is indicated by the factor supply curve.
- According to the above graph, equilibrium price is at P₃ and Quantity is at Q₃.
- When Q₃ is employed, the total earnings for the factor is shown by the area of OP₃EQ₃.
- Those total earnings consist of two components of; transfer earnings and economic rent.

- Accordingly, the area of the triangle OP_3E is the economic rent obtained from employment of Q_3 , and the area of the OEQ_3 triangle is the transfer earnings obtained from employment of Q_3 .
- Further we can identify how the total earnings of the factor get separated as the transfer earnings, and economic rent as follows,
- According to the above graph; P_1 is the minimum price to be paid for factor owners to keep Q_1 employed, which is transfer earnings. But at the time when Q_1 is made employed the market price of that factor is P_3 ; Therefore the difference between $P_3 - P_1$ is the economic rent.
- Similarly, the transfer earnings is P_1 . When Q_2 employed. The difference between $P_3 - P_1$ is the economic rent.
- When Q_3 is employed in service, the minimum cost to be paid was P_3 Since it is similar to the factor market price there the total earnings are transfer earnings.
- When elasticity of supply vary there will be changes in transfer earnings and economic rent.
- Given below is the behavior of economic rent and transfer earnings when elasticity of supply.

Factor earnings in a unitary elastic c factor supply situation.

- When there is unitary elastic factor supply the economic rent and the transfer earnings are similar to each other.
- The figure below illustrates that

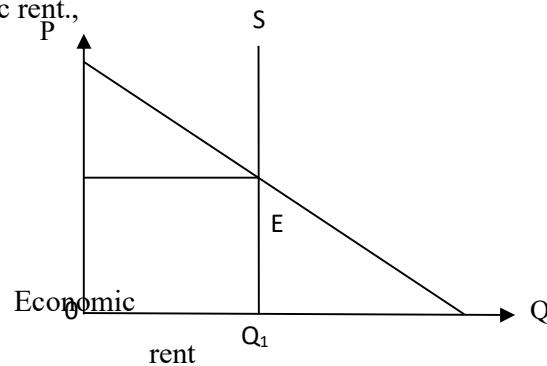


- According to above graph, the area of the rectangle OP_1EQ_1 is the total factor earnings.

- Of the total earnings the area of the triangle OP_1E is the economic rent and area of OEQ_1 triangle is the transfer earnings.
- While the areas of OP_1E and OEQ_1 triangles are equal to each other, it indicates that the transfer earnings and economic rent also equal to each other.

Factor earnings in a perfect inelastic factor supply situation.

- When factor supply is perfectly inelastic total factor earnings will consist of economic rent.,

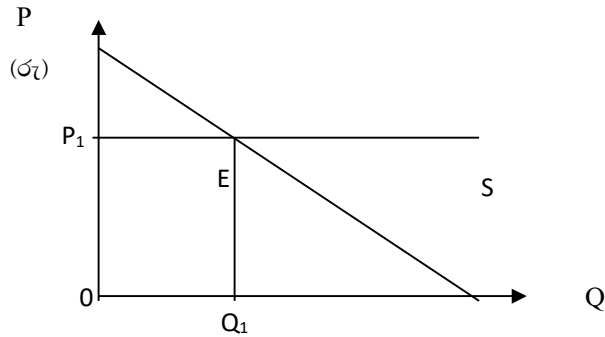


- According to the graph, although the factor price is zero at a perfect inelastic supply situation, the earnings of that factor is Q_1 .
- The price determined by the market demand and supply is P_1 . Then the total earnings are indicated by the area of OP_1EQ_1 and the total earnings equal the economic rent.
- The reason for the total earnings to be equal to economic rent is that the price to be paid to keep Q_1 employed in service is zero when the supply situation is perfectly inelastic.

Factor earnings in a perfect elastic factor supply situation.

- When the factor supply is perfectly elastic, the total earnings are equal to the transfer earnings,

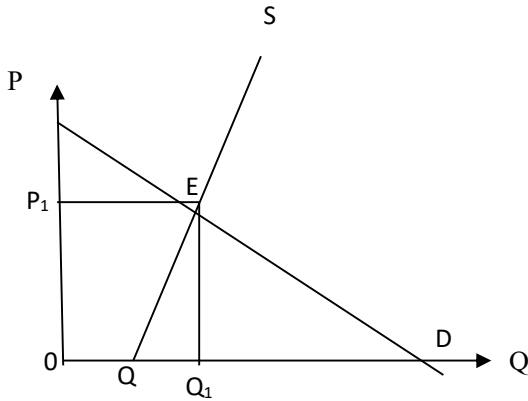
It can be illustrated as shown below,



- When the factor supply is perfectly elastic the factor owners are willing to provides any amount of factor supply at P_1 price.
- Therefore, the area of P_1EQ_1 rectangle is equal to the total transfer earnings. (for an example , if we take the factor of land the possibility of shifting from one crop to another.)

Factor earnings in a inelastic factor supply situation.

- When there is an inelastic factor supply, more of the earnings are economic rent, and the lesser earning are the transfer earnings.
- The following figure indicates that situation.

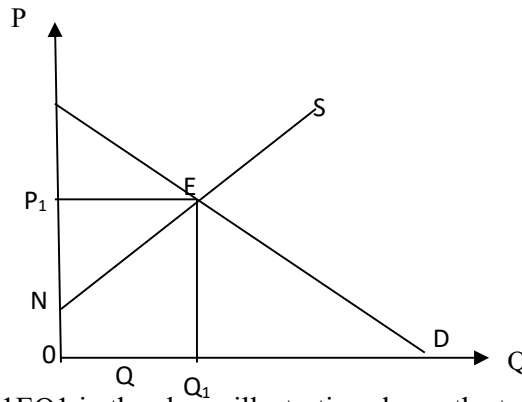


- According to the graph, the area of OP_1EQ_1 rectangle indicates the total earnings and the area of OP_1EQ indicates the economic rent, and QEQ_1 area indicates the transfer earnings.

- The increase in size of the area of OP_1EQ over QEQ_1 , indicates that the economic rent is more than transfer earnings when the factor supply is inelastic.

Factor earnings in a elastic factor supply situation

- When factor earnings an elastic, more the earning are transfer earnings and the lesser economic rent
- The figure below indicates such a situation.



- The area of OP_1EQ_1 in the above illustration shows the total earnings.
- The area of the NP_1E is equal to economic rent and the area of $ONEQ_1$ is equal to transfer earnings.
- The area of $ONEQ_1$ being greater than the area of NP_1E indicates that in an elastic factor supply more the earnings consist of transfer earnings.

Competency 5 : Demonstrates the readiness of preparing the national accounts by considering the macroeconomic operations

Competency level 5.1:- Investigates macroeconomic objectives, macroeconomic problems and macroeconomic policies.

Number of periods:- 06

Expected Learnings Outcomes:-

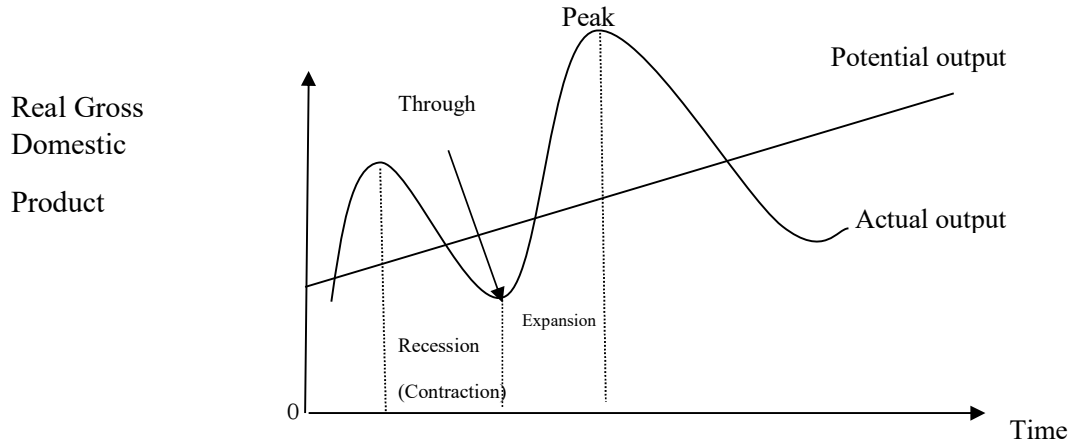
- Names macroeconomic objectives and macroeconomic variables
- Describes macroeconomic problems
- Introduces a business cycle
- Introduces various stages of a business cycle
- Explains economic fluctuations using a business cycle
- Describes macroeconomic policies

A Guidelines to Explain the Subject Matters:

- Various objectives expected to be achieved through aggregate economic activities of a society are identified as macroeconomic objectives.
- Macroeconomic objectives are as follows.
 - Full employment
 - Economic stability
 - Equity
 - Economic growth
 - Sustainable development
- Basic variables affecting over aggregate economic activities are called macroeconomic variables.
- Examples for macroeconomic variables are as follows.
 - Aggregate output
 - Full employment
 - General price level
 - Exchange rate
 - Interest rate

- Balance of payments
- At situations where macroeconomic variables do not reach the expected level or where there are unexpected macroeconomic fluctuations macroeconomic problems occur.
- Examples for macroeconomic problems are as follows.
 - Economic recessions and economic expansions
 - Unemployment
 - Inflation
- Economic recession is a short term (occurring for less than two quarters) situation. Economic recession occurs due to a decrease in aggregate demand for goods and services which leads to a fall in production; causing a recession in the economy. Unemployment increases with economic recession. Economic recession can be shown by an inward shift of a production point of a production possibility curve.
- In an economic expansion the is considered as a short term situation, it is a longer situation than an economic recession. Aggregate demand for goods and services and total output of the economy increases at this situation.
- In an economic expansion aggregate output of the economy increases due to increases in aggregate demand for goods and services.
- The non use of total factors of production of an economy productively and maximally for production is called unemployment.
- Continuous increase in the general price level of an economy is called inflation.
- Macroeconomic fluctuations can be shown with the use of the business cycle.
- Business cycles can also be used to understand the relationships between the short term and long term behavior of the macro economy.
- Cyclical behavior of the real gross domestic product of an economy with time is called business cycle.
- Four stages of a business cycle can be identified as,
 - Recession
 - Trough
 - Expansion

- Peak
- It can be shown by a graph as below.



- Short run behavior of aggregate economy is shown by the actual output while the long run behavior of aggregate economy is shown by the potential output
- The maximum and sustainable level of output obtained without an inflationary pressure when utilizing resources of an economy fully with maximum efficiency is called potential output.
- Actual output changes more with time than the potential output.
- The lowest situation of actual output below potential output is called trough and the highest situation of actual output above the potential output is called peak.
- The stage which moves from trough to peak is called expansion.
- The stage which moves from peak to trough is called recession.
- The period of expansion is longer than the period of recession.
- The length from one peak to another peak of a business cycle is called the length of a business cycle.
- The length between peaks of the same business cycle differs from each other.

- Long term trend of a business cycle is shown by the potential output. It also shows the behavior of long term economic growth.
- The difference between potential output and actual output is the output gap.
- To reach macroeconomic objectives it is important to minimize output gap.
- The steps taken to direct economy towards macroeconomic objectives are called macroeconomic policies.
- Macroeconomic policies are as follows.
 - Monetary policies
 - Fiscal policies
 - Supply side policies
 - Income policies
 - Direct control policies
 - Foreign trade policies
- Some of the policies can be explained as follows.
- Monetary policy influences over money supply and interest rates.
 - By changing money supply and interest rate variables such as production, consumption, savings, investments and price levels get affected. Instruments used for monetary policy are,
 - Central bank interest rate
 - Statutory reserve ratio
 - Open market operations
- Monetary policy is implemented by the central bank.
- What is identified as the government finance policy is the fiscal policy. By changing government revenue and government expenditure and by affecting macroeconomic variables, macroeconomic objectives can be achieved. The main instruments of fiscal policy are,
 - Government expenditure
 - Taxes
 - Public debt

Competency level 5.2 :- Analyzes different approaches of national income accounting using a circular flow.

Number of periods :- 05

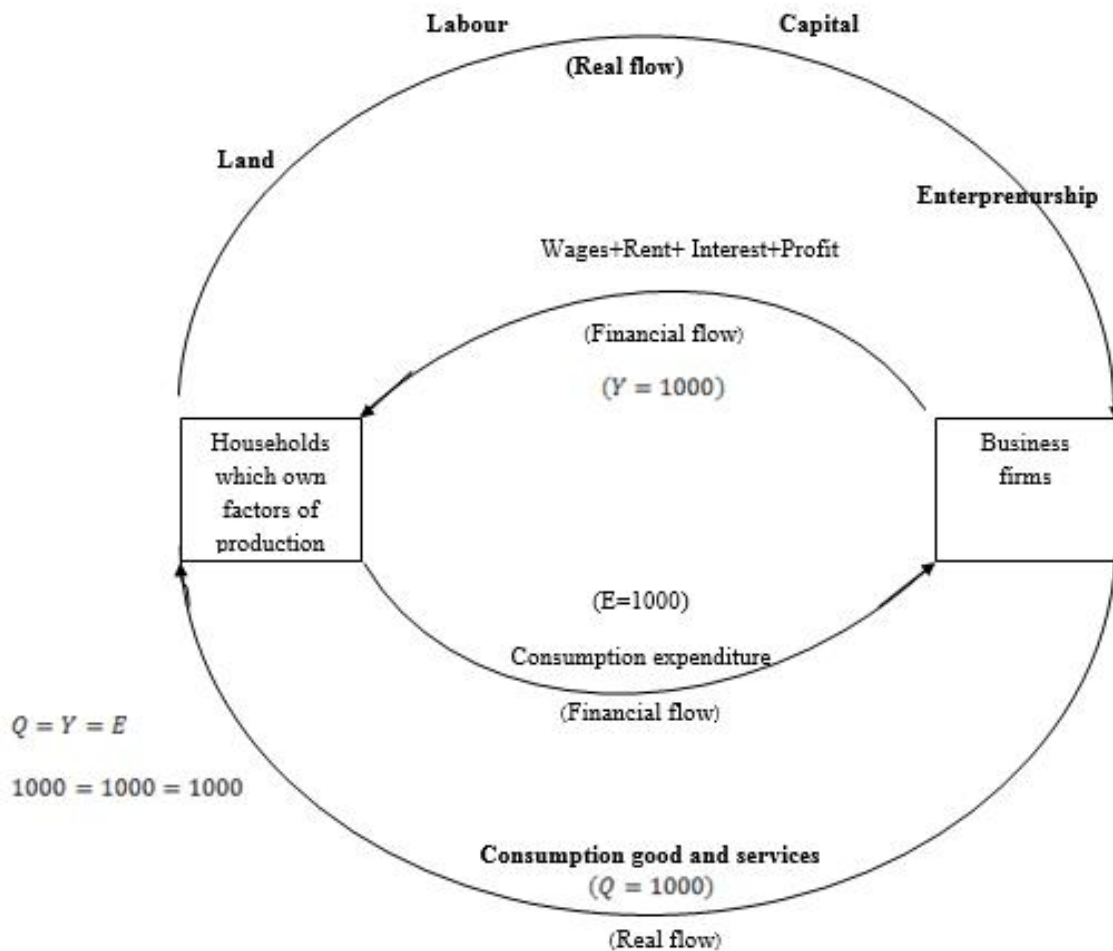
Expected Learnings Outcomes :-

- Explains economic actors related to economic activities by naming them.
- Explains interrelationships among economic actors of an economy using a circular flow of a simple economy.
- Shows three approaches of the national income accounting using the circular flow of simple economy.

A Guidelines to Explain the Subject Matters:

- Different sectors contributing to macroeconomic activities are called economic actors. Economic actors are mainly of four types. They are,
 1. Household sector
 2. Business sector
 3. Government sector
 4. Foreign sector
- Main duties of the household sector are as follows.
 - Household sector owns factors of production and by providing these factors of production to the business sector they earn factor income.
 - Purchasing of goods and services produced by the business sector.
 - Generating savings of an economy.
 - Household sector pays taxes to the government and consume public services provided by the government.
- Main duties of the business sector are as follows.

- Producing of goods and services with the use of factors of production provided by the household sector and earning of income by selling them.
- From the profits they gain, pay dividends to the shareholders and pay taxes to the government and the balance is invested
- Main duties of the government sector are as follows.
 - From the tax revenue they gain, provision of public goods, welfare goods and services.
 - Protect national defense, law and peace. Protect environment. Provide social overhead capital such as education and health.
 - Supply of economic overhead capital such as highways and communication.
 - Providing of consumer subsidies to households and providing of producer subsidies to the business sector.
- Main functions of the foreign sector are as follows.
 - Import and export of goods and services
 - Payment and receiving of foreign factor income
- The following illustration can be used to show the interrelationship among the agents.
- In describing the function simple economy activities, in association with a circular economic flow,



- Using the above diagram three approaches of national income accounting can be explained with the use of two sector model.
- Business sector produces goods and services by combining factors of production obtained from the household sector and it is **the product approach** relevant to national income accounting.
- When the business sector purchases factors of production from the household sector there will be a flow of factor income flow to the household sector and it is **the income approach** in national income accounting.
- Expenditures incurred by household sector to purchase goods and services produced by business sector is **the expenditure approach** in national income accounting.

Competency level 5.3 :- Exhibits preparedness to compile national accounts following the output approach.

Number of periods :- 08

Expected Learnings Outcome:-

- Names methods of eliminating multiple counting error.
- Explains the final output approach and shows how national accounts can be made using that approach.
- Explains the value addition approach and shows how national accounts can be made using that approach.
- Describes the concepts of Gross Value of Output and the value of intermediate inputs.

A Guidelines to Explain the Subject Matters:

- What happens in the product approach is mainly the calculation of the Gross Domestic Product. Gross Domestic Product means the value of all final goods and services produced within a particular period of time (Normally within one year), within the geographical boundaries of the country.
- Following product approach, when estimating the value of the Gross Domestic Product, the product's value can be overestimated by adding the value of same good at several times. This addition of the value of the same good at several times is called multiple counting error.
- Therefore, to estimate the value of the national output by eliminating the multiple counting error two approaches are being used.
 1. Final product approach
 2. Value addition approach
- If national output is estimated either by using final product approach or value addition approach it should provide the same value.
- Inclusion of the value of goods and services to the national accounts which have passed the final stage of production process or goods and services that can be consumed or invested without processing further is called the final product approach.

- According to the final product approach, the value of the total output is estimated by adjusting the value of change in inventory to the value of the sum of consumer goods and capital goods production.
- Although the final product approach is used to eliminate the problem of multiple counting error it also has problems. This happens due to the difficulty of identifying consumer goods and intermediate goods separately.
Example:- Although sugar is considered as a final good it can be an intermediate good for a confectionary producer.
- The most suitable approach to estimate the value of national output avoiding these weaknesses of final product approach would be the value addition approach.
- The financial value of goods and services produced is identified as the gross value of output. (GVO)
- Goods and services purchased from outside to the production process are identified as intermediate inputs.
- Gross value added (GVA) means the value received after deducting the value of intermediate inputs(Intermediate consumption) from the gross value of output (GVO).
- Gross value added can be estimated in two ways.
 - Product source
 - Income source
- Gross value added is estimated using product source by deducting all the values of inputs purchased from outside from the value of output.
- Gross value added is estimated using income source by adding all factor incomes received for all production factors engaged in the production process and by adding the cost of depreciation for the utilization of fixed capital.

Example:-

Product source	Income source
1 Value of output 9500 (Before entering the market)	1 Payments for factors of production Rs.
2 Minus	Rent 2000
Raw materials 3000	Wages 1000
Cost of services 1500	Interest 800
Total 4500	Profits 500
	Total <u>4300</u>
	2 Non-factor payments
	Depreciation of capital 700
	Total 700
Total value addition 5000	Total value addition 5000

Competency level 5.4:- Analyses the related concepts and the estimation of gross domestic product following product approach

Number of periods:- 10

Expected Learnings Outcomes:-

- Explains the production boundary.
- Explains the items that should be included and excluded within the production boundary.
- Introduces economic activities of Sri Lanka based on standard industrial activities.
- Describes the composition of economic activities based on institutional sectors.
- Names various prices of estimating the value of a product.
- Describes the concepts of basic price, producers' price and purchasers' price with examples.
- Describes the concepts of gross domestic product at market price and gross national income.
- Shows the composition of the industrial production index in Sri Lanka.
- Explains the concepts related to product approach

A Guidelines to Explain the Subject Matters:

- The concept of Production boundary is used to define economically productive activities and non-economic productive activities separately. SNA – 2008 describes production boundary clearly.
- To define production boundary, producers can be classified into three types based on the main product they produce within an economy.
 - Market Producers
 - Non-profit institutions serving households (NPISHS)
 - Producers of household sector
- When estimating national accounts production activities that should be included in the production boundary are as follows.
 - All goods and services sold at the market are included in the production boundary.

- All goods and services that are produced for institutional units other than for the institution produced.
- All goods that are retained by their producers with themselves having produced them for their own final consumption or for purchasing of capital.
- The own-account production of housing services by owner occupiers.
- Domestic and personal services performed by paid domestic staff.
- Producing of agricultural crops for own consumption, storing of those, gathering of fruits and obtaining of foods from forests, chopping and gathering of wood, hunting and catching fish.
- The processing of agricultural products, the production of grain by threshing, the production of flour by milling, the preparation of meat and fish for preservation, bottling and drying of fruits, making curd, weaving of baskets, bags and mats; etc.
- Weaving cloth, dress making, making furniture.
- The supply of water (mini projects to supply water through small streams and water falls).
- In this way, the goods production activities taken place within a household are included in the production boundary the services performed by a member of a household for their own consumption are not considered as economically productive activities.

Examples:- The preparation of foods for members of a household.

Looking after the children.

The care of old and infirm people of a household.

Activities such as decorating and cleaning of a house.

- However, inclusion to production boundary is determined by whether there is any intervention of man in the economic activity or not.
- Although being a natural resource, if output is generated with the intervention of man, then it is included in the production boundary.

Example:- Growing of fish in a fish tank

- However, growth of fish without intervention of man is not included to production boundary.

- Non observed economic activities should also include in estimating the value of gross domestic product.
- There are two types of non-observed economic activities.
 - Hidden economic activities
 - Illegal economic activities
- Hidden economic activities are those legal economic activities that are not captured in formal statistical enquiries.
- Several reasons affecting to hide these economic activities purposely.
 - To avoid payment of tax
 - To avoid the payment of social security contributions
 - To avoid having to meet certain legal standards
Example:- Payment of minimum wages, laws relating to maximum work hours.
- In this way due to absence of keeping records avoidance of laws and regulations and due to absence of information, data relating to hidden economic activities may not be obtained.
- There are two forms of illegal economic activities.
 - The production and distribution of goods and services forbidden by law.
Example:- Alcoholic , drugs, prostitution, transportation of goods prohibited
 - Some legal goods and services produced and distributed by unauthorized people.
Example:- Unlicensed medical practitioners
- Productive activities not included in Gross Domestic Product.
 - Unpaid household work.
 - Freely obtained natural resources (Land, water, air etc.).
 - Natural resources grown without the intervention of man (such as forests).
 - Education and leisure.
 - Change in value of resources due to natural growth or change in prices.
- Nonproductive transactions excluded in national income accounting.
 - Nonproductive market transactions
 - Transfer payments

- Transactions relating to financial papers
- Transactions relating to second hand products
- Different models are being used in estimating the Gross Domestic Product in Sri Lanka.
 1. Classification based on industrial origin
 2. Classification based on institutional sector
- Headings of standard industrial activities in Sri Lanka are as follows.
 1. Agriculture, forestry and fishing
 2. Mining and quarrying, manufacturing, electricity and water production activities
 - 2.1 – Sub sector manufacturing
 3. Construction
 4. Trade, transportation services, accommodation and food supply
 5. Information and communication services
 6. Financial and insurance services
 7. Ownership of dwellings and real estate activities
 8. Professional, scientific, technical, administration and related services
 9. Public administration, defense, education, health and social protection services
 10. Other services
- Financial value of the above mentioned economic activities is the total value added at basic price.
- Composition of economic activities based on the classification of institutional sector.
- An institutional unit is an economic entity that is capable, in its own right, of owning assets, incurring liabilities and engaging in economic activities and in transactions with other entities.
- At an estimating time period the entire set of resident institutional units is called an economic area. An economic area is a geographical area where people, goods and capital can move freely under an individual government with an effective economic control.
- There are five main institutional units exist within a total economic area.

- **The non-financial corporations sector (NFC)**

Various corporations and companies whose main aim is production for the market are included in this sector. Production companies in both government and private sector include under this.

- **The financial corporations sector (FC)**

Corporations and companies whose principal activity is providing financial services include under this category. Financial intermediation and provision of other special goods and services are the functions of this sector. Corporations in both government and private sector include under this.

- **The government sector (GG)**

Various government institutions that provide services aiming private and collective consumption without aiming market include under government sector.

Examples:- Education, health, defense, protection of environment

- **The non-profit institutions serving households sector (NPISH)**

Institutions that provide services for households freely or at a price less than the market price are included in this sector. Workers or members of these institutions dedicate their labour voluntarily.

Examples:-Charities, religious organizations, political parties

- **Households sector (HH)**

Household units that engage in production aiming own consumption or aiming market are included in this sector. Both consumers and producers exist within this sector. The clergy and prisoners are also included in this sector.

- Apart from the above mentioned five residential institutional units there is another institutional units that includes non-residential households and corporations. It is called the rest of the world(**ROR**).

- Various prices exist to estimate the value of gross domestic product following product approach. They are given below.
 - Basic price
 - Producers' price
 - Purchasers' price

- Basic price means the price relevant for a good or service at a situation where a good or a service is produced by the producer and is ready for sale. Which means the amount receivable by the producer from the purchaser is called the basic price. Subsidies received by the producer in production are included in this price.

Example:- Fertilizer subsidy

- Although transportation costs are not included in this basic price inseparable transportation costs paid by consumers to the producers can be included in basic price.
- Any taxes on products are not included in basic price.
- There is a difference that exists between taxes on products and other taxes on products.
- Taxes on products is depend upon production units and it can be a unit or an ad-valerom tax.
- Other taxes imposed on products are not imposed over the product or profit of the producer. But is imposed over land, fixed assets, number of workers or on other related activities.

Examples:-

- A particular percentage of wages is being charged as a tax on land and buildings
 - Business and professional license fee
 - Stamp duty
 - Taxes on vehicles
 - Emission tax
 - Taxes on foreign tours and remittances
-
- There is a difference between subsidies on products and other subsidies on products.
 - Subsidies on products means the subsidies provided for a producing a good. It can be a unit or an ad-valerom subsidy.

Example:- Financial subsidies provided for tea, coconut and rubber

- The other subsidies on products means the subsidies provided for related production activities.

Examples:-

- Subsidies provided on number of workers in an institution
- Subsidies provided on employment promotion
- Subsidies provided on disable in order to make them employed
- Subsidies provided on promoting training programmes
- Subsidies provided to minimize environmental pollution
- Subsidies provided for recycling

- Basic price can be estimated as follows.

$\text{Basic price} = \text{Producers' price} - \text{Net taxes on products}$

(Net taxes on products= Taxes - Subsidies)

- The producers' price is the price receivable by the producer when releasing the product from the production place towards retailers.
- It is the value received after deducting the value of subsidies provided over producers plus direct taxes on products at basic price.
- Producers' price can be estimated as follows.

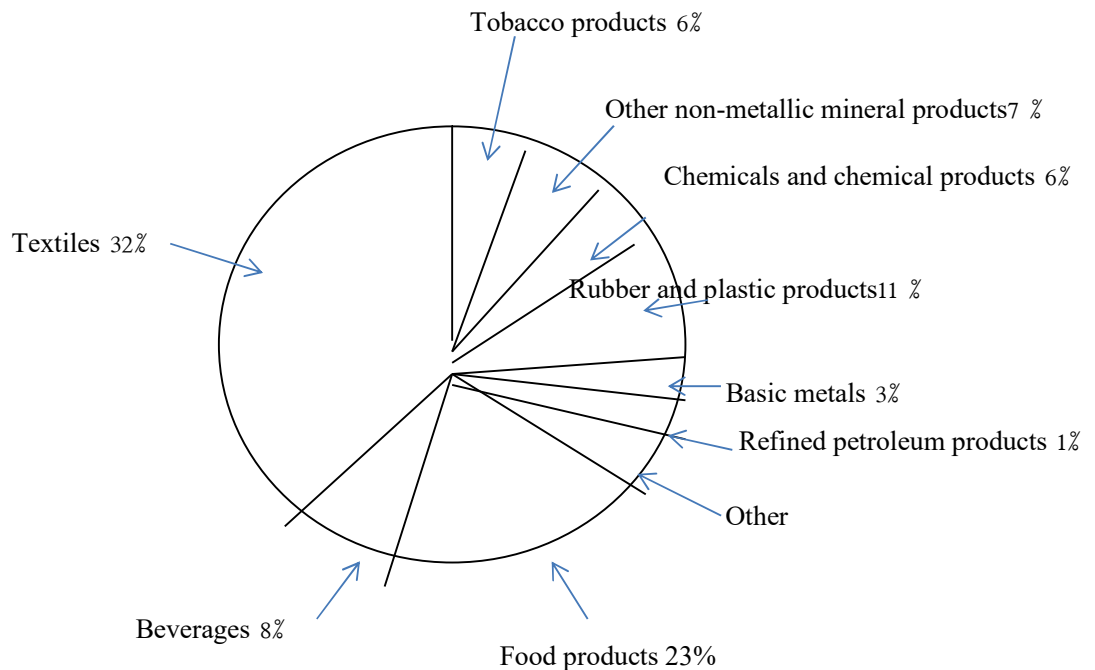
$\text{Producers' price} = \text{Basic price} + \text{Taxes on products} - \text{Subsidies on products}$
--

- Purchasers' price means the actual price paid by the consumer to purchase good or a service.
- Purchasers' price includes transportation costs, trade margins and net taxes paid by consumers other than producers' price.
- Purchasers' price can be estimated as follows.
- $$\text{Purchasers' price} = \text{Producers' price} + \text{Trade margin charged by intermediaries and transportation costs} - \text{Subsidies provided to retailers by the government on behalf of consumers} + \text{Value Added Taxes on products charged from consumers.}$$

- Gross Domestic Product should always estimate at market price, the value of Gross Domestic Product at market price can be obtained by adjusting the value of net indirect taxes to the total value of Gross Value Added.

$$GDP = \sum GVA + NT \quad (NT = \text{Net Taxes})$$

- Following the new method when estimating the national accounts the value of gross domestic product is calculated only at market prices.
- The main index that shows a country's industrial operation is the index of industrial production. According to the international standards it covers 17 main activities.
- During 2015 industrial production index showed 9.2% growth. The composition of the index of industrial production in 2015 is shown below.



From central bank of Sri Lanka annual report - 2015

- One of the main important objectives of national accounts is to know whether the value of gross domestic product at current price has changed with time or not.
- By estimating the value of goods and services stock produced within a year using the current prices, the value of gross domestic product at current prices can be obtained.

- By estimating the value of goods and services stock produced within a year using a base year's price, the value of gross domestic product at constant price can be obtained.
- GDP deflator means the ratio between Gross Domestic Product at current price and the gross domestic product at constant price.

$$\text{GDP deflator} = \frac{\text{Gross Domestic Product at current price}}{\text{Gross Domestic Product at constant price}} \times 100$$

- The value of all final goods and services produced at a particular period of time (normally within a year) within geographical boundaries of a country is conceptually called the Gross Domestic Product.
- The practical approach of estimating Gross Domestic Product is the estimating of value addition of all economic activities of a country at a given year.
- Gross Domestic Product consists of the sum of these Gross Value Additions.

Example	(-	Gross Value of Output	(GVO) 200
		Raw materials	80
		Cost of services	+ 40
		Intermediate consumption (IC)	<u>-120</u>
		Gross Value Added (GVA)	<u><u>80</u></u>

- As Gross Domestic Product should be always estimated at market price the value of net taxes should be adjusted to the above value of Gross Value Added.

Gross Domestic Product = Gross Value Added – Net taxes

$$\mathbf{GDP = GVA + Net\ taxes}$$

(Net taxes= Taxes on products – Subsidies)

- The value of net domestic product is obtained by deducting the value of fixed capital consumption from the value of gross domestic product.

$$\mathbf{NDP = GDP - CFC}$$

- The value per person from the value of all final goods and services produced by a country normally within a year is called per capita GDP.
- Per capita GDP can be estimated as follows.

$\frac{\text{Gross Domestic Product}}{\text{Mid-Year Population}} = \text{Per capita GDP}$
--

- The value of Gross National Income is obtained after adjusting the value of primary incomes of residential of rest of the world or net primary income from rest of the world to the value of Gross Domestic Income obtained by the sum of all primary incomes generated through production process in a particular country at a given period of time (normally within one year).
- The concept of gross national product is not being used today. The reason for this is when the value of net primary income of rest of the world is adjusted to the value of gross domestic product the value obtained is not being the value of the product but is the value of the income.
 Gross National Income=Gross Domestic Product + Net primary income of rest of the world
 (Net primary income of the rest of the world= Primary income received from other countries- Primary income paid to other countries)
- Net national income is the value obtained by deducting the fixed capital consumption from the value of gross national income.

$$\text{Net National Income} = \text{Gross National Income} - \text{Fixed Capital Consumption}$$

(Fixed Capital consumption= Capital depreciation)

Competency level 5.5:- Investigates the concepts related to the calculation of the gross domestic product using the income approach

Number of periods:- 10

Expected Learnings Outcomes:-

- Describes the source of domestic income
- States the components of the gross domestic income
- Describes the concepts related to the income approach

A Guidelines to Explain the Subject Matters:

- The value of domestic income is obtained under the income approach by adding all factor earnings contributed towards production process.
- Factor incomes can be classified under the five main headings and those are as follows.
 - Employee compensation
 - Rental income
 - Net interest income
 - Corporate profits
 - Self-employment income/ mixed income
- Employee compensation means the earnings of supplying labour for the production process. It can be classified under three headings.
 - Wages / salaries
 - Payments for social protection systems by the employers
 - Insurance facilities, health facilities, disaster allowances, labour compensation for employees
- Rental income means the incomes gained mainly by renting real assets and natural resources.
- Rental income consists of the following sources.
 - Rental income earned by renting fixed assets and natural resources
 - Rental income earned by renting houses and the assumed rent for the houses where owner lives
 - Income for intellectual property

- Interest income means the payment made by the business sector for the suppliers of financial capital on behalf of the usage of financial capital.
- The profits of the owners of business firms registered as companies are called corporate profits.
- Profits and entrepreneurial income consists of the following sources.
 - Corporate taxes
 - Dividends for owners of the companies
 - Retained profits
- Total profits included in the national accounts.
- The incomes of sole enterprises not registered as companies, joint ventures, cooperatives, farmers and incomes of professionals are called mixed income.
- Following economic theories, source of domestic income can be classified and explained as above.
- The total of all factor earnings of productive activities is the gross domestic income generated through domestic product.
- Following SNA 2008 components of Sri Lanka's gross domestic income is classified in a different.

1. Compensation of employees(CE)
2. Operational surplus(OS)

Main components of gross operational surplus are as follows.

- Net operational surplus
- Fixed capital consumption
- 3 Mixed income
- 4 Other taxes on products
- The sum of above the components is the gross domestic product at basic price.
- Salaries and wages, contribution towards social protection provided by employers, direct funds given by employers in the situations of the sick, the unemployed and the retired are called compensation of employees.
- Operational surplus is the income generated by corporate sector. (It consists of interest, rent and gross profits)
- Gross operational surplus means the balance gained after deducting all costs and net production taxes from the value of a product.

- Gross operational surplus consists of property incomes such as interest, rent and gross profits.
- When deducting the value of consumption of capital from the value of gross operational surplus the value of the net operational surplus is obtained.
- Mixed income means the income generated by non-corporations of households and joint ventures.
- Mixed income is estimated by deducting intermediate consumption, all net taxes and payments of paid employees from the income of enterprises run by households.
- Fixed capital consumption means the expenditures incur for the reformation of capital assets within the production process. (Depreciation)
- Other taxes on products means the taxes imposed over the provision of administration services or public property. (Imposing of rules and regulations for production process, providing of administration needs and facilities for production process)
- Gross domestic product at market price means the value obtained by adjusting net taxes on products and imports to the value of gross domestic product estimated at basic price.
- Some concepts related to income approach are given below.
 - Primary income
 - Gross domestic income and net domestic income
 - Gross national income and net national income
 - Disposable national income
 - Household income / personal income
 - Disposable household income
 - Real national income

Statistical example:-

Item	At current market price
1 Compensation of employees	3000
2 Gross operational surplus	5000
2. 1 Net operational surplus	4000
2. 3 Fixed capital formation	1000
3 Mixed income	2000
	100
4 Other taxes on products ^minus subsidies&	10100
5 Total value added at basic price	700
6 Net taxes on products and imports	10800
7 Gross Domestic Product at market price	

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- Concepts related to income approach can be explained as follows.
- Primary income means the income gained by institutional units as a result of engage in production or as a result of owning assets needed for production.
- There are four components of it.
 - 5 Compensation of employees (CE)
 - 6 Operational surplus(OS)
 - 7 Mixed income(MI)
 - 8 Net taxes on products and imports(t-s)
- These incomes generated through a production process equals to the value of gross value added(GVA) and it is called primary income.

$$GVA = € (CE + OS + MI + (t - s))$$

$$GDP = GVA + \text{Net indirect taxes}$$

- In an economy the value of gross domestic income is obtained by adding the value of fixed capital consumption to the value of income gained for the all factors of production contributed for the production process at a particular period of time.

- When removing the value of fixed capital consumption from the value of gross domestic income the value of net domestic income is obtained.
- Gross national income means the value obtained after adjusting the value of net primary income from rest of the world to the value of gross domestic income.
- When removing the value of fixed capital consumption from the value of gross national income the value of net national income is obtained.
- Disposable gross national income means the value obtained after adjusting the value of net secondary income from rest of the world (Receipts of secondary income from rest of the world –payments of secondary income from rest of the world) to the value of gross national income.
- Household income (personal income) means the value gained after removing the value of incomes not received by households from national income and by adding the incomes of households which were not added to the national income.
- Net secondary income from the rest of the world
- Incomes not received by households
 - Capital consumption
 - Retained profits
 - Corporate profits
 - Contributions towards social protection
 - Government's property income
- Incomes of households not included in national income
 - Net personal secondary income from rest of the world
 - Pensions
 - Interest gained by households for public debt
 - Other subsidies gained by households
- Disposable household income means the value obtained after deducting personal income taxes (Direct taxes) from the value of household income.
- Real national income means the value obtained after adjusting the effect over export purchasing power under international trade to the value of gross national income at constant price.

- Real national income can be estimated as follows.
- Real national income = Gross national income at constant price

$$\left[\frac{\text{The value of exports}}{\text{Import price index}} \quad \frac{\text{The value of exports}}{\text{Export price index}} \right]$$

Competency level 5.6:- Investigates the related concepts and the way of calculating Gross Domestic Product using expenditure approach.

Number of periods:- 08

Expected Learnings Outcomes:-

- Explains Gross Domestic Expenditure.
- Describes the components of Gross Domestic Expenditure by naming them.
- Estimates Gross Domestic Expenditure.
- Estimates Gross Domestic Product.
- Estimates Gross Domestic Income.
- Describes the related concepts of expenditure approach.

A Guidelines to Explain the Subject Matters:

- Gross Domestic Product is calculated through the expenditure approach by estimating the value of the total amount spent to purchase the total output of an economy at a particular period of time.
- Sources of gross domestic expenditure exist in three forms. They are,
 - Household consumption expenditure
 - Government consumption expenditure
 - Gross investment expenditure
- There are two types of consumption expenditures
 - Final consumption expenditure
 - Actual final consumption expenditure
- Final consumption expenditure means, the expenditures made to purchase goods and services.
- Actual final consumption expenditure is the expenditure estimated to purchase goods and services without considering who made the expenditure really.
- This happens because purchaser and the consumer not being the same person always. (Consumer benefit through public health)
- Final consumption expenditure can be classified into two types as private consumption expenditure and as Government consumption expenditure.

- Private consumption expenditure means the sum of consumption expenditure of households and the expenditures of nonprofit institutions servicing households.
- Aids received by households from other countries are also included in private consumption expenditure.
- Government consumption expenditure (Government purchases) means the expenditures made by the central government and the sub institutions of central government to purchase goods and services.
- Government consumption expenditure again classified into two types as Individual Government consumption expenditure and as collective consumption expenditure.
- Individual consumption expenditures of government include the expenditures of education, health, social protection, welfare, sports and leisure.
- Collective consumption expenditures of government include the expenditures of state administration, railway and highways.
- Machinery, equipment, buildings, factories and existing stocks used in production process are considered as capital formation. These factors of production that can be consumed for more than one year (Long term) which contribute to the production process are called gross domestic capital formation (Gross investment expenditure)
- Gross domestic capital formation means the sum of long term capital goods added to the domestic economy. It also includes the cost of capital depreciation.
- The value obtained after deducting the consumption of fixed capital from gross capital formation is called net domestic capital formation.
- Gross domestic capital formation consists of three main types.
 - Gross domestic fixed capital formation
 - Change in inventories
 - Change in values (Change occurs due to purchasing and selling of valuables such as gold, silver, pearl and gems)
- Gross domestic expenditure of Sri Lanka is estimated by adjusting the value of gross domestic capital formation to final consumption expenditure of the economy.

Gross domestic expenditure at market price = Private consumption expenditure + Government consumption expenditure + gross domestic capital formation

- By adjusting the value of net exports to gross domestic expenditure at market price the value of expenditure on gross domestic product can be estimated.

Expenditure on Gross Domestic Product at market price = Gross domestic expenditure + Net exports

Gross national income at market price = Gross domestic product at market prices + Net primary income from rest of the world

Disposable gross national income at market price = Gross national product at market price + Net current transfers from rest of the world (Net secondary income from rest of the world)

Example,

1)	Final consumption expenditure(FCE)		500
	1.1. Household consumption expenditure	375	
	1.2. Services provided to households with non-profits	100	
	1.3. Government consumption expenditure	25	
2)	Gross domestic capital formation		800
	2'1 Fixed capital formation	400	
	2'2 Change in inventory	250	
	2'3 Change in value	150	
3)	Gross domestic expenditure at market price(1+2)		1300
4)	Net exports		200

4'1 Exports	500	
4'2 Imports	300	
5) Gross domestic product at market price(3+4) (GVO)		1500
6) Gross national income at market price(5+7)		1400
7) Net primary income from rest of the world		-100
7'1 Receipts of primary income from rest of the world	800	
7'2 Payments of primary income from rest of the world	900	
8) Disposable gross national income at market price(6+9)		1650
9) Net current transfers from ROW		250
12'1 Receipts of current transfers from ROW	300	
12'2 Payments of current transfers from ROW	50	

- The sum of household savings, business savings and public savings at the beginning of a particular time period is identified as domestic savings.
- The balance gained after deducting total consumption expenditure from gross domestic product of an economy also considered as domestic savings.
- When estimating the value of domestic savings as estimating the value of household, business and public savings is difficult as in the macroeconomic equilibrium gross investments equals to the value of savings it is obtained by adjusting the value of net exports to the value of gross investments.

- $$I = \text{GDCF} + X - M$$

$$I = \text{SD}$$

GDCF = Gross domestic capital formation / Gross investments
X-M = Net exports
I = Total investment

- The value of national saving is obtained after adjusting net primary income and net current transfers from rest of the world to domestic savings at a particular period of time.
- At a given year the resource stock exist in an economy for utilization is called total resource stock.
- The value of total resource stock is obtained by adjusting the value of goods and non-factor services imports to the value of gross domestic product.

Gross domestic product	1500
Goods and non-factor services imports	<u>300</u>
Resource stock	<u><u>1800</u></u>

- The way of utilizing total resource stock is called resource utilization.
 - Final consumption expenditure
 - Gross domestic capital formation } Gross domestic expenditure
 - Goods and non-factor services exports

Gross domestic expenditure	1300
Exports	500
Resource utilization	1800_____

Competency level 5.7 Analyzes the importance of national income accounting and limitations of national income accounting

Number of periods 08

Expected Learnings Outcomes :-

- Describes the importance of national income accounting.
- Presents limitations of national income accounting.
- Describes the concept of green gross domestic product with examples.

A Guidelines to Explain the Subject Matters:

- Data obtained by compiling national accounts using output, income and expenditure approach are considered to be very important. These data can be used to understand aggregate economy's structure, assessment, behavior and also these data are used for economic management.
- Main uses of national accounting data is shown below.
 - To assess the duty of an economy
 - To measure economic growth
 - To estimate per capita GDP
 - To reveal structural characteristics of an economy
 - To reveal functional income distribution
 - For international comparisons
 - To identify functional relationships between economic actors
 - To reveal resource stock and resource utilization
 - To obtain information for economic management
 - To forecast behavior of macroeconomic variables
- The following limitations exist in making national accounts.
- Some of productive economic activities are not included in national accounts. They are as follows.
- Although goods production activities take place within a household included in national accounts the services rendered by households for their own

consumption are not included in national accounts considering them as non-economic activities. (Unpaid services performed within a house)

- Although hidden economic activities and illegal economic activities are included in national accounts the data relating to these activities could not be obtained due to absence of records, absence of information and evading form laws.
- Housewives work is not included in national accounts.
- Productive economic activities taken place within informal economy not included in national accounts.
- Non consideration of effect over environmental resources due to production.
- Non consideration of changes in the productivity of government services.
- Happiness gained through leisure is not included in national accounts.
- Interest payments by the government is not included in estimating national accounts.
- Some durable consumer goods are not included in national accounts considering as investments.
- The concept of Green national accounts connected with sustainable development.
- There are situations where environment obtain benefits through production activities.

Examples

- Growing forests
- Recycling of waste
- Use of polluted water after purifying
- Some situations exist where production activities damage environment.

Examples

- Damaging of ozone layer
- Damaging coast
- Soil erosion
- Destroying of fisheries
- Deforestation

- Estimating national accounts in this way considering the benefits and losses over environment through production activities is called green national accounting.
- When estimating green gross domestic product the benefits over environment through production activities are added and losses over environment through production activities are deducted

Competency 06 : Analyses the determination of macroeconomic equilibrium.

Competency level 6.1: Analyses the macroeconomic equilibrium and macroeconomic dis-equilibrium.

Number of Periods : 05

Expected Learnings Outcomes

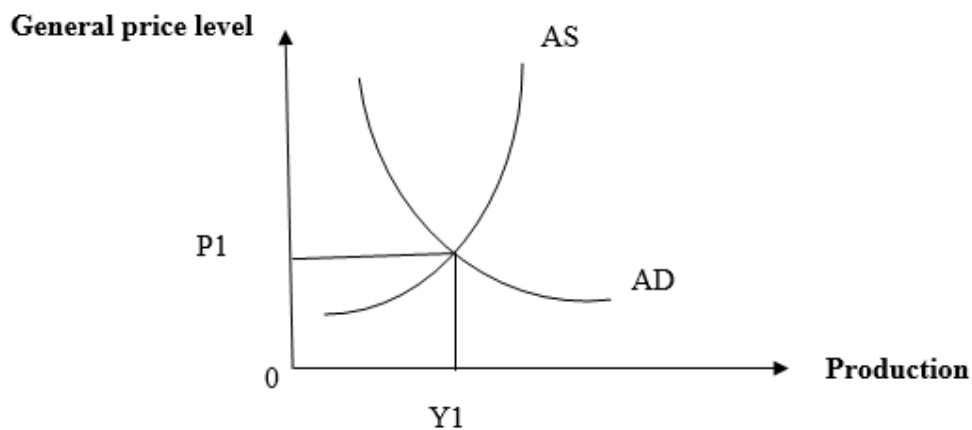
- Defines the macroeconomic equilibrium.
- Defines the macroeconomic instability.
- Explains the alternative approaches to present the macroeconomic equilibrium.

A Guidelines to Explain the Subject Matters:

- Macro - economic equilibrium is an economic state in an economy where the value of the aggregate demand equals the value of the aggregate output.
- During macroeconomic equilibrium aggregate output level and aggregate employment level remain at a consistent level without any fluctuations .
- Macro- economic disequilibrium is an economic state in an economy where the value of aggregate demand cannot be satisfied by the aggregate supply. IN this situations there are fluctuations in aggregate output and aggregate employment level.
- The approaches which can present the macroeconomic equilibrium are given below.
 1. Aggregate Income = Aggregate Expenditure Approach ($Y=E$)
 2. Withdrawals = Injections approach ($W=J$)
 3. Aggregate Demand = Aggregate supply Approach ($AD=AS$)
- In the Income and Expenditure Approach, the macroeconomic equilibrium is determined according to the condition that the aggregate expenditure equal to the aggregate income in a certain period of time.
- In the Withdrawal and Injection Approach, the macroeconomic equilibrium is determined according to the condition that leakages from the circular flow of income equals injections in a certain period of time.

- In the Aggregate Demand and Supply Approach the macroeconomic equilibrium is determined according to the condition that aggregate demand equals to aggregate supply in a certain period of time.
- The aggregate demand consists of the demand for goods and services of private consumption(C), government consumption(G), investment(I) and net export(NX).
- It can be presented as follows;

$$AD = C + I + G + (X - M)$$
- Accordingly, macroeconomic economic equilibrium is determined when aggregate demand is equal to aggregate supply.
- It can be shown by following graph.



Competency level 6.2 : Analyses the components of aggregate expenditure.

Number of periods : 10

Expected Learning Outcomes :

- Explains the components of aggregate expenditure.
- Defines the consumption function.
- Describes the autonomous consumption and marginal propensity to consume with consumption function.
- Demonstrates the autonomous consumption and marginal propensity to consume with graphs.
- Examines the relationship between household consumption expenditure and household savings with equations and graphs.
- Defines the saving function.
- Explains the dissaving and marginal propensity to save with savings function.
- Demonstrates the dissaving and marginal propensity to save with graphs.
- Examines the average propensity to consume and average propensity to save graphically.
- Introduces investment expenditure, government purchases and net exports.
- Demonstrate the autonomous investment expenditure and government expenditures graphically.

A Guidelines to Explain the Subject Matters:

- The aggregate expenditure is defined as the expenditure which expends for goods and services by economic agents in a certain period of time.
- The components of aggregate expenditure can be presented as below :
 - Consumption Expenditure (C)
 - Investment Expenditure (I)
 - Government Purchasers (G)
 - Net Exports (Nx) (X-M)
- Consumption expenditure is the expenditure which expends for consumption of goods and services by households.

- That relationship can be presented by a function as below.

$$\boxed{C = F(Y_d)}$$

C = Private consumption expenditure
Y_d = Disposable Income

- Because there is a direct relationship exists between consumption and disposable income, the consumption function can be presented as follows.

$$\boxed{C = a + bY_d}$$

C = Household consumption
a = Autonomous consumption
b = Marginal propensity to consume
Y_d = Disposable Income

- The Autonomous consumption is demonstrated by the coefficient of “a” with the consumption function. The consumption expenditure in zero income is known as autonomous consumption. Namely, consumption which is determined without the effect of income.
- The marginal Propensity to consume is demonstrated by the coefficient of “b” with the consumption function. The percentage change in consumption relative to the percentage change in disposable income is the marginal propensity to consume. It is the quantity changed in the consumptions when income changed by one unit.
- Marginal propensity to consume can be calculated as follows.

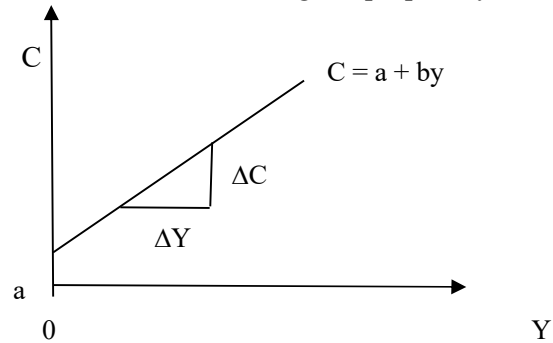
$$\boxed{\text{Marginal propensity to consume} = \frac{\text{Change in Consumption}}{\text{Change in income}}}$$

$$\boxed{MPC (b) = \frac{\Delta C}{\Delta Y}}$$

ΔC = Change in Consumption

ΔY = Change in income

- The graph below shows the consumption line associated with the consumption function and how marginal propensity to consume is obtained,



- The slope of the consumption curve ($\Delta C / \Delta Y$) shows the marginal propensity to consume (MPC).
- Saving is the part of income which is not spend on consumption.
- The savings depends on disposable income. That can be shown as below :

$S = Y - C$	C = Household Savings
	Y = Income
	S = consumption expenditure

- The savings function can be shown as below after substituting the saving function to the above function.

$$S = Y - C$$

$$S = Y - (a + by)$$

$$S = Y - a - by$$

$$S = -a + (1 - b) Y$$

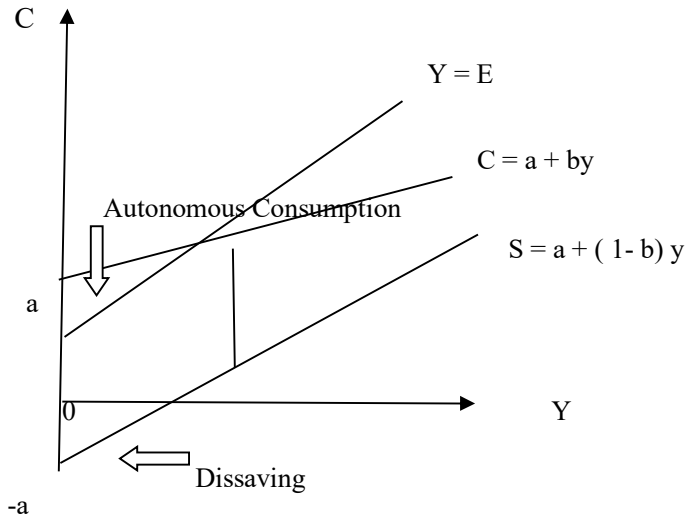
a = Dissaving = negative saving

- The consumption expenditure at zero level of income is known as dissaving. Dissavings are there until consumption expenditure equals to disposable income.
- At zero level of income consumption is made with savings before.
- Marginal propensity to save ($1 - b$)
- The marginal propensity to save is the ratio of change in the savings relative to changes of the income. Namely, change in quantity of savings to a change in income by one unit.
- Marginal propensity to save can be calculated as follows ,

$$\text{Marginal propensity to consume} = \frac{\text{Change in Saving}}{\text{Change in income}}$$

$$\text{MPC or } (1-b) = \frac{\Delta S}{\Delta Y}$$

- The graph below shows the savings curve associated to the savings function and how marginal propensity to save is obtained with that.



Example :

$$C = 200 + 0.8yd$$

$$S = -200 + 0.2 yd$$

The income when saving is zero

$$S = -200 + 0.2 yd$$

$$0 + 200 = 0.2yd$$

$$200 = yd$$

$$\frac{200}{0.2}$$

$$\underline{\underline{1000 = yd}}$$

The total consumption at that income level is,

$$C = 200 + 0.8yd$$

$$C = 200 + 0.8 \times 1000$$

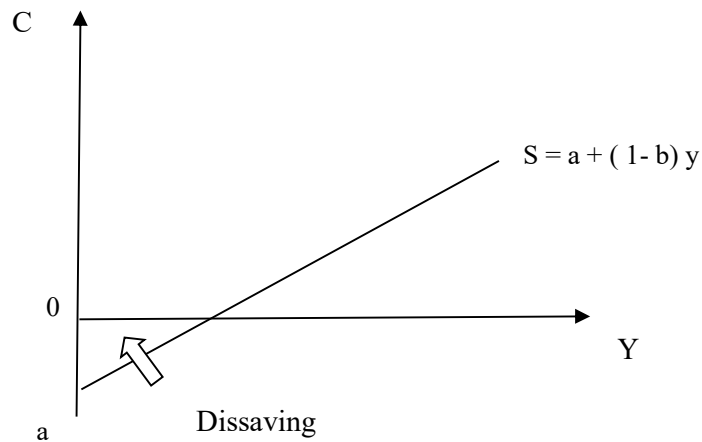
$$C = 200 + 800$$

$$\underline{\underline{C = 1000}}$$

- According to the graph above at the income level which savings equal to zero consumption equal to income. Sum of the value of the slope of the consumption function and saving function is equal to one.

MPC + MPS = 1	$\left. \begin{array}{l} \text{MPC} = 0.8 \\ \text{MPS} = 0.2 \end{array} \right\} = 1$
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- Dissavings are equal to autonomous consumption.
- Saving function can be presented as below.

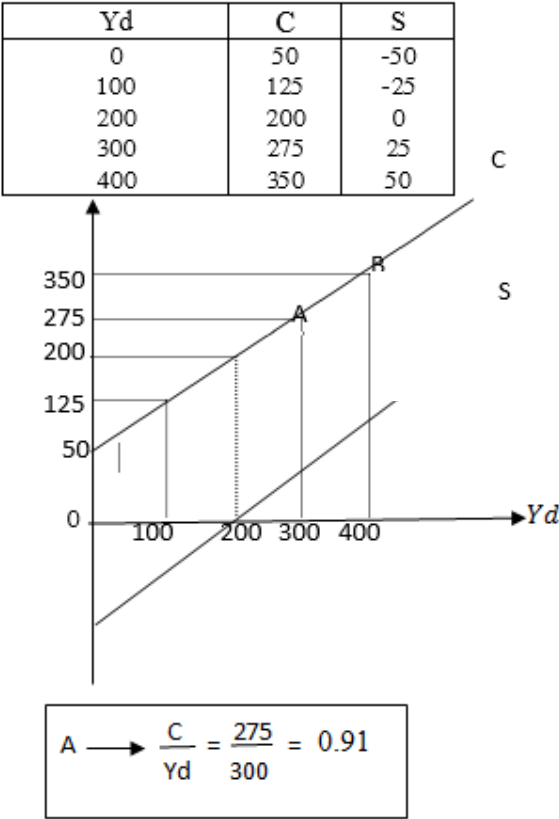


- The average propensity to consume is the ratio between disposable income and total consumption. It explains which quantity would be used in consumption by the disposable income.
- Average propensity to consume can be calculated as below,

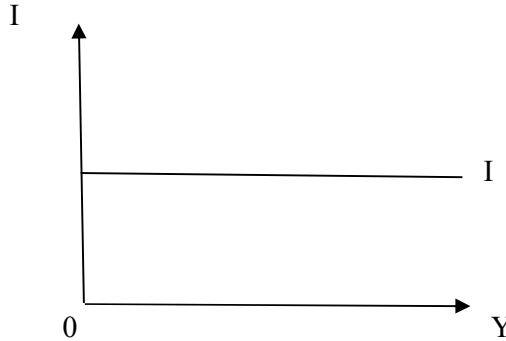
$\text{AP-C} = \frac{\text{Change in Saving}}{\text{Change in income}}$

$$APC = \frac{C}{Y}$$

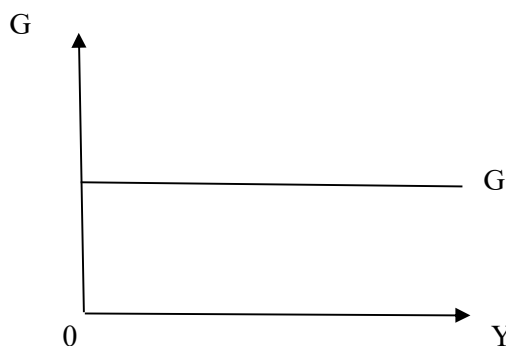
- The ratio between the total savings and total income is the average propensity to save. How much of the income is used for savings is explained by the average propensity to save. Average propensity to save can be calculated by dividing the savings from the relevant disposable income.
- Average propensity to consume and average propensity to save can be calculated using the schedule and graph below.



- Investment expenditure is an autonomous expenditure because there is an assumption that it is not determined on the income and that's why the investment curve is linear and parallel to the horizontal axis.
- It can be presented as below,



- The slope of the investment curve taken a zero. Investment of an economy is a component that belongs to injections.
- The government purchases are also considered as an autonomous expenditure as it is not dependent on income.
- The expenditure for government services such as, national security, education, health, transportation, can be stated as examples for government purchases. The total government purchases include both expenses of goods and services and transfer expenditures. Pension and fertilizer subsidies are examples for transfers.
- The government purchases curve can be shown as below.



- Net exports are the difference between imports and exports ($X - M$)
- Net exports is a component of the aggregate demand
- Net export is not determined by the national income. It is also an autonomous variable.
- The imports are determined by the national income and some goods have to be imported although the income is zero.

Competency level 6.3 : Analyses the macroeconomic equilibrium through different approaches

Number of periods : 10

Expected Learnings Outcomes:

- Presents the way of deciding the macroeconomic equilibrium through aggregate income = aggregate expenditure approach with schedules .
- Presents the way of deciding the macroeconomic equilibrium through aggregate income = aggregate expenditure approach with graphs.
- Presents the way of deciding the macroeconomic equilibrium through aggregate income = aggregate expenditure approach with equations.
- Presents the way of deciding the macroeconomic equilibrium through withdrawals = injections approach with schedules.
- Presents the way of deciding the macroeconomic equilibrium through withdrawals = injections approach with graphs.
- Presents the way of deciding the macroeconomic equilibrium through withdrawals = injections approach with equations.

A Guidelines to Explain the Subject Matters:

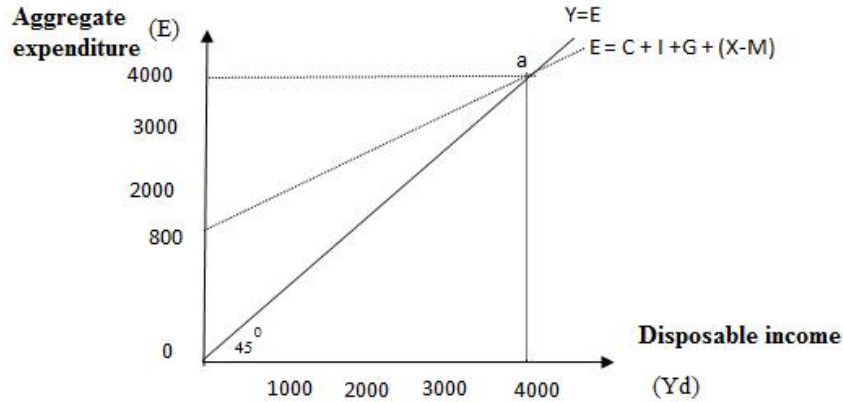
- At macroeconomic equilibrium when aggregate income (y) equals to aggregate expenditure (E).
- Y explains the aggregate product(out put) aggregate income.
- The aggregate expenditure consists of household consumption (C) , Investment expenditure (I) , government purchasers (G) and net exports (X-M)

$$E = C + I + G + (X-M)$$

- The following schedule presents the determination of macro economic equilibrium through the aggregate income = aggregate demand approach.

Income (Y)	Disposable Income (Yd)	Consumption (C)	Investment (I)	Gov. Purchasers (G)	Exports (X)	Imports (M)	Net exports (X-M)	Total Expenditure (E) (C+I+G)
0	-250	400	200	300	200	300	-100	1000
2000	1750	2000	200	300	200	300	-100	2400
4000	3750	3600	200	300	200	300	-100	4000
6000	5750	5200	200	300	200	300	-100	5600
8000	7750	6800	200	300	200	300	-100	7200
10000	9750	8400	200	300	200	300	-100	8800

- According to the schedule above at the income level of Rs. 4000 the total value of the expenditure is equal to total income and the macroeconomic equilibrium is accrued at the 4000 level of income. Here the aggregate demand can be fulfilled by the aggregate product.
- At all other income levels, the aggregate income does not equal to the aggregate demand, therefore macroeconomic equilibrium is not created.
- The graph given below also shows how the macroeconomic equilibrium is determined by aggregate income= aggregate expenditure approach.



- The graph above shows the aggregate expenditure (E) in vertical axis and disposable income (Yd) in horizontal axis.
- The equilibrium income and expenditure curve (45° degree line) begins from the origin and slope upwards from left to right.
- At the point “a” aggregate income (Y) equals to the aggregate expenditure (E).
- Accordingly macroeconomic equilibrium level is 4000.
- The determination macro of economic equilibrium can be explained by equations as below.

$$Y = E$$

$$Y = C + I + G + (X-M)$$

Example :	Consumption function	(C)	=	$600 + 0.8 Yd$
	Investment expenditure	(I)	=	200
	Government purchases	(G)	=	300
	Net Exports	(X-M)	=	- 100
	Disposable income	(Y - T)	=	Yd
	Autonomous Taxes		=	250

$$Y = E$$

$$Y = C + I + G + (X-M)$$

$$Y = 600 + 0.8 Yd + 200 + 300 + (100)$$

$$Y = 600 + 0.8 (Y-T) + 200 + 300 + (100)$$

$$Y = 1000 + 0.8(Y-250)$$

$$Y = 1000 + 0.8Y - 200$$

$$Y - 0.8Y = 800$$

$$0.2Y = 800$$

$$0.2Y = \underline{800}$$

$$0.2$$

$$Y = 4000$$

- The determination of macroeconomic equilibrium can also be shown by withdrawal and injection approach.
- Withdrawals are the leakages from the circular flow of income at particular period of time. There are three types of withdrawals in an economy.
 - Savings (S)
 - Autonomous Taxes (T)
 - Imports (M)
- The part which is not spend for consumption by the disposable income is known as savings.
- The part which move to the government revenue from household income is known as autonomous taxes.
- Aggregate expenditure flow is contracted by means of savings, autonomous taxes and imports.
- Total values of injections cause expansion and it strengthen the circular flow of income.
- There are three forms of injections in an economy.
 - Autonomous investment (I)
 - Autonomous government purchasers (G)
 - Exports (X)
- Withdrawals weaken the circular flow of income and total injections strengthen the circular flow of income. The macroeconomic equilibrium occurs when these equal each other. That condition of an economy can be shown as below.

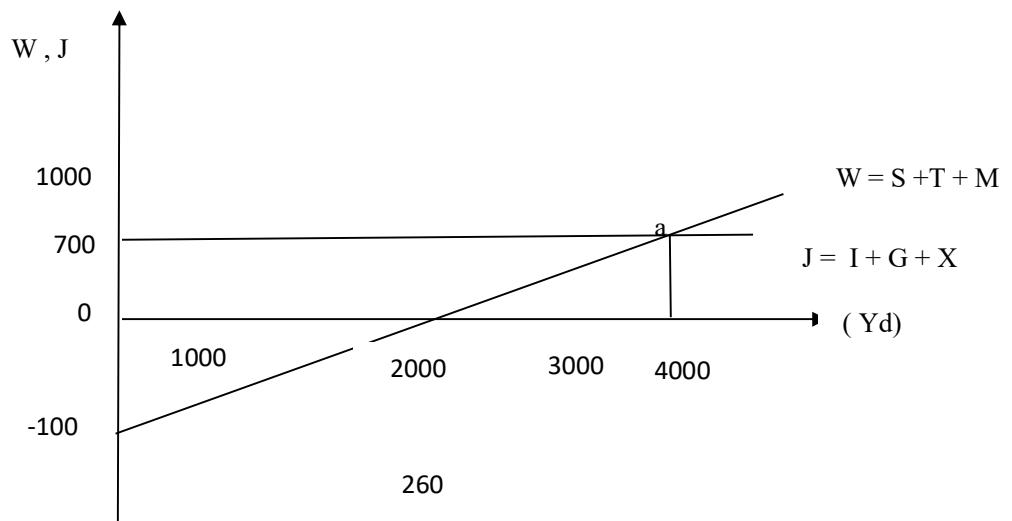
$$W = J$$

$$S + T + M = I + G + X$$

- The determination of macroeconomic equilibrium by withdrawals and injection approach can be illustrated by schedules below.

Y	S	T	M	I	G	X	W	J
Inco me	Savi ngs	Autono mous taxes	Impo rts	Invest ment	Govern ment purchas es	Expo rts	Total withdra wals	Total injecti ons
0	-650	250	300	200	300	200	-150	700
2000	-250	250	300	200	300	200	300	700
4000	150	250	300	200	300	200	700	700
6000	550	250	300	200	300	200	1100	700
8000	950	250	300	200	300	200	1500	700
10000	1350	250	300	200	300	200	1900	700

- The total injections are equal to the total withdrawals at the income level of Rs.400 million and at that situation macroeconomic equilibrium is achieved.
- The determination of macroeconomic equilibrium by withdrawals and the injections approach can be illustrated as follows.



- In the above diagram the withdrawals curve begins below the origin.
- In that diagram the injections curve begins above the origin, and it is parallel to the income axis.
- According to the above graph point “a” illustrates the macroeconomic equilibrium and at that point withdrawals are equal to injections at that point as income level is 4000 the equilibrium level of income would be Rs. 4000 million.
- The determinations of macro economic equilibrium with withdrawals= injection approach can be illustrated with equations as below.
- The components which are included in the total withdrawals in an economy can be shown as below.

$$\mathbf{W = S + T + M}$$

- The components which are included in total injections in an economy can be shown as below.

$$\mathbf{J = I + G + X}$$

- According to that, the determination of macroeconomic equilibrium with withdrawals= injection approach can be illustrated by equations as follows.

$$\mathbf{W = J}$$

$$\mathbf{S + T + M = I + G + X}$$

Example :	Savings	(S)	=	150
	Autonomous Taxes	(T)	=	250
	Imports	(M)	=	300
	Value of the total Withdrawals	(W)	=	700

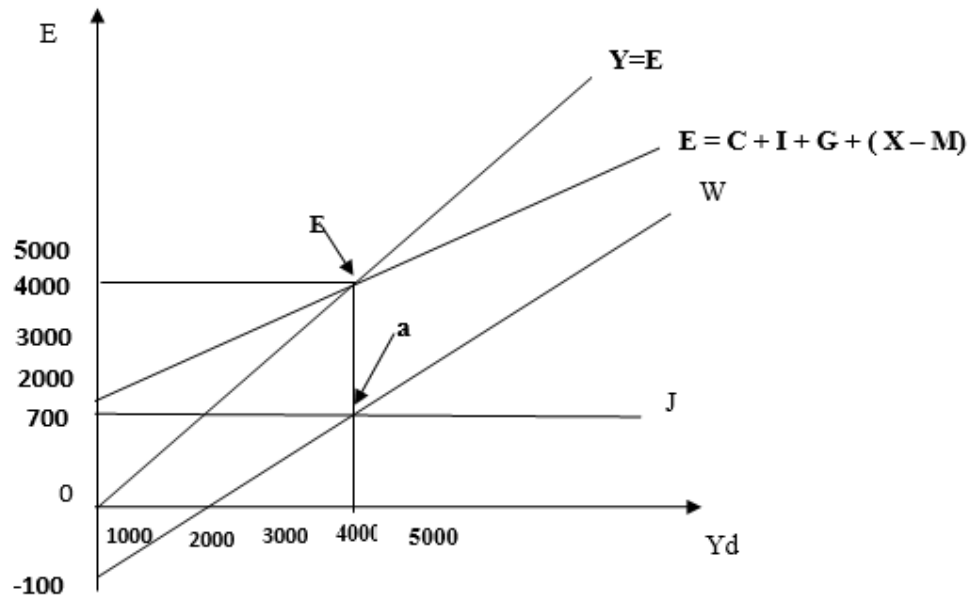
Investments	(I) = 200
Government purchases	(G) = 300
Exports	(X) = 200
Total Injections	(J) = 700

$Y = E$	$Y = E$
$S + T + M = I + G + X$	$S + T + M = I + G + X$
$-600 + 0.2y + 250 = 200 + 300 + 200$	$150 + 250 + 300 = 200 + 300 + 200$
$-600 + 0.2(Y - 250) + 250 + 300 = 700$	$700 = 700$
$-600 + 0.2y + 50 + 250 + 300 = 700$	
$-600 + 500 + 0.2y = 700$	
$0.2y = 700 - 500 + 600$	
$Y = \frac{800}{0.2}$	
$Y = 4000$	

- The relationship between the income and expenditure approach and withdrawals and injections approach can be illustrated by the following schedule.

Income (Y)	Savings (S)	Autonomous Tax (T)	Consumption (C)	Investments (I)	Government Purchases (G)	Exports (X)	Total Expenditure (E)	Imports (M)
0	(-650)	250	600	200	300	200	1000	300
2000	(-250)	250	2000	200	300	200	2400	300
4000	150	250	3600	200	300	200	4000	300
6000	550	250	5200	200	300	200	5600	300
8000	950	250	6800	200	300	200	7200	300
10000	1350	250	8400	200	300	200	8800	300

- According to the above schedule at the income level Rs.4000 million, the income is equals to expenditure and withdrawals equals to injections. ($W=J$)
- The relationship between the income and expenditure approach and withdrawals and injections approach can be illustrated by a graph as below.



- At the point “E” where the aggregate income line intersects aggregate expenditure line and at the point where the withdrawals lines intersects injection line the income level of Rs. 4000 million equals to each other.
- According to this we can understand the relationship between income and expenditure approach and withdrawals and injections approach.

Competency level 6.4 : Demonstrates the changes of the macroeconomic equilibrium with the changes of the components of the aggregate demand through the multiplier process.

Number of periods : 10

Expected Learning Outcome

- Explains the change of the macroeconomic equilibrium.
- Names the factors affecting change in macroeconomic equilibrium.
- Presents the way of changing the macroeconomic equilibrium on the change of the types of autonomous expenditures.
- Explains the way of changing the macroeconomic equilibrium on the change of consumption function.
- Describes the way of changing the macroeconomic equilibrium on the change of investment function.
- Introduces the multiplier process in the macro economy.
- Analyses the multiplier process of the economy with schedule and equation.
- Explains the investment multiplier, government expenditure multiplier, tax multiplier transfer multiplier and balance budget multiplier numerically.
- Describes the occasions, where the equilibrium income is on full employment level and beyond that.

A Guidelines to Explain the Subject Matters:

- Following factors affect the change in macroeconomic equilibrium.
 - Change in consumption function

- Change in autonomous investments
- Change in government purchases
- Change in autonomous taxes
- Change in transfer expenditures
- Consumption function changes according to a change in autonomous consumption or marginal propensity to consume. As a result the macroeconomic equilibrium also changes with a change in autonomous consumption or marginal propensity to consume.
- The changes of macroeconomic equilibrium according to the changes in autonomous consumption can be illustrated by the following example.

Example:

$$C = 200 + 0.8Y_d$$

$$I = 100$$

$$Y = E$$

$$Y = C + I$$

$$Y = 200 + 0.8Y_d + 100$$

$$Y = 300$$

$$Y - 0.8Y = 300$$

$$Y = \frac{300}{0.2}$$

$$0.2$$

$$Y = 1500$$

- When the autonomous Consumption increases from 200 to 250, the consumption function will be changed as below.

$$C = 250 + 0.8Y_d$$

$$I = 100$$

$$Y = E$$

$$Y = C + I$$

$$Y = 250 + 0.8Y_d + 100$$

$$Y = 350$$

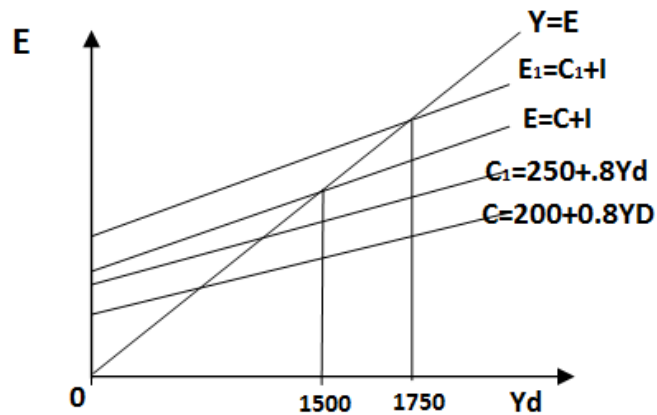
$$Y - 0.8Y = 350$$

$$Y = \frac{350}{0.2}$$

$$0.2$$

$$Y = 1750 \text{ (Rs. Million)}$$

- With the change in autonomous consumption, the change in equilibrium can also be illustrated with a graph as below.



- The change in macroeconomic equilibrium change in the marginal propensity to consume can be explained by the example below.

$$C = 200 + 0.8Y_d$$

$$I = 100$$

$$Y = E$$

$$Y = C + I$$

$$Y = 250 + 0.8Y_d$$

Equilibrium income (Y) = 1500(million).

- When the marginal propensity to consume increases from 0.8 to 0.9, the macroeconomic equilibrium is,

$$Y = E$$

$$Y = C + I$$

$$Y = 200 + 0.9Y_d + 100$$

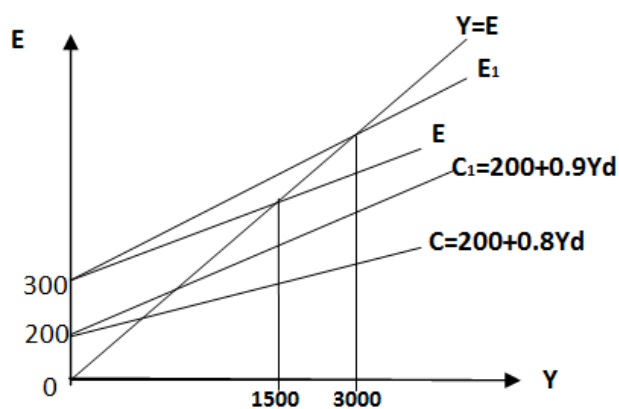
$$Y = 300$$

$$Y - 0.9y = 300$$

$$Y = \frac{300}{0.2}$$

Equilibrium income = 3000(million)

- According to the increase in the marginal propensity to consume when autonomous consumption remain constant, the change in macroeconomic equilibrium changes can be illustrated by the following graph.



- Macro economic equilibrium changed due to a change in autonomous investment.

Example : Investment of an economy = 100

$$\text{Consumption} = 200 + 0.8Y_d$$

$$\text{Government purchasers} = 200$$

$$\text{Taxes} = 50$$

$$\text{Net exports} = -100$$

$$Y = E$$

$$Y = C + I + G + (X - M)$$

$$Y = 200 + 0.8(Y - T) + 200 + 100 + (-100)$$

$$Y = 400 + 0.8(Y - 50)$$

$$Y = 400 + 0.8Y - 40.0$$

$$Y = \frac{360}{0.2}$$

$$Y = 1800$$

- If the investment in the above example is increased by 100, the new equilibrium can be calculated as below.

$$Y = E$$

$$Y = C + I + G + (X - M)$$

$$Y = 200 + 0.8(Y - T) + 200 + 200 + (-100)$$

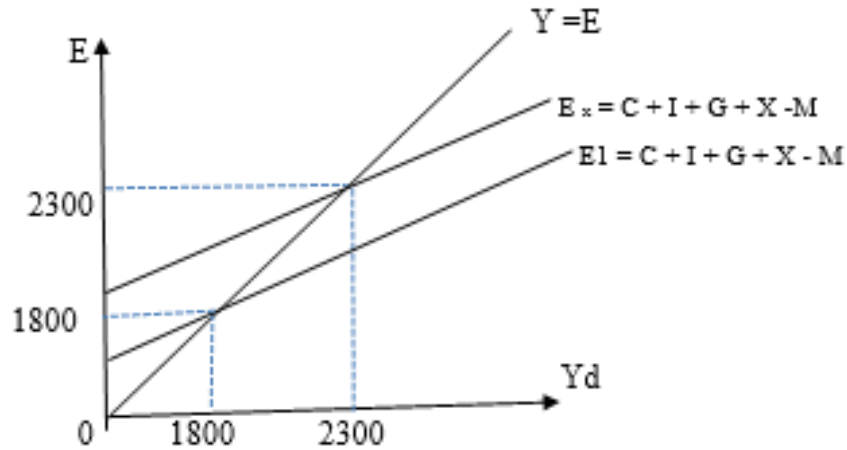
$$Y = 500 + 0.8(Y - 50)$$

$$Y = 500 + 0.8Y - 40$$

$$Y = \frac{460}{0.2}$$

$$Y = 2300$$

- When the investment increases to 100 the equilibrium income increases from 1800 to 2300 and it is an economic expansion.
- That can be illustrated by a graph as below.



- According to the graph above due to the increase of investment the aggregate demand income has also increased and the aggregate demand curve shifts upward from E1 to E2. The equilibrium income level increases from 1800 to 2300.
- Macroeconomic equilibrium also change due to a change in government purchasers.

Example

$$Y = E$$

$$Y = C + I + G + (X - M)$$

$$Y = 200 + 0.8(Y - T) + 200 + 100 + (-100)$$

$$Y = 500 + 0.8Y - 40$$

$$Y - 0.8Y = 360$$

$$Y = \frac{360}{0.2}$$

$$0.2$$

$$Y = 1800$$

- If the government purchases increase by 50 the macroeconomic equilibrium increase as below.

$$Y = E$$

$$Y = C + I + G + (X - M)$$

$$Y = 200 + 0.8 (Y - T) + 100 + 250 + (-100)$$

$$Y = 400 + 0.8 Y - 40$$

$$Y = \frac{410}{0.2}$$

$$Y = 2050$$

- Due to the increase of government purchasers by 50 macroeconomic equilibrium increases from 1800 to 2500.
- Due to the change of taxes by the government the macroeconomic equilibrium also changes.
- Equilibrium output decreases due to increase of imposing taxes and the equilibrium output increases due to decrease of taxes.

Example : If we consider the above example, the equilibrium output is 1800 and to impose of taxes are 50. If the taxes increased up to 100 the equilibrium output will be changed as follows.

$$Y = E$$

$$Y = C + I + G + (X - M)$$

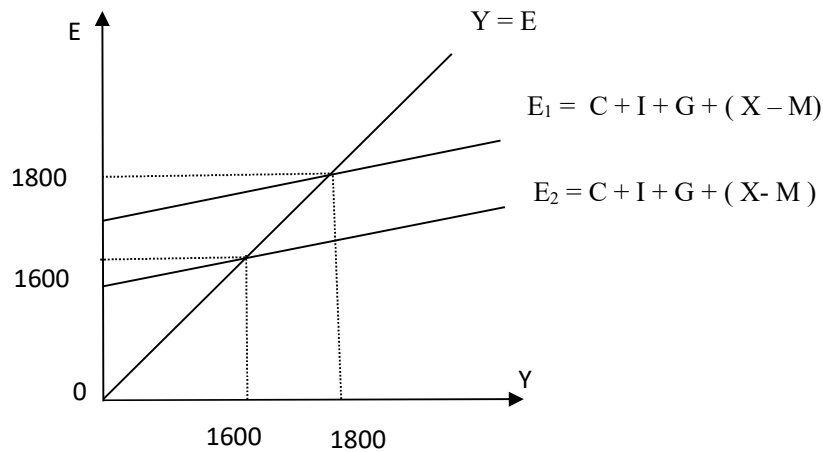
$$Y = 200 + 0.8 (Y - T) + 200 + 100 + (-100)$$

$$Y = 320 + 0.8 Y - 40$$

$$Y = \frac{320}{0.2}$$

$$Y = 1600$$

- Due to impose of taxes the equilibrium output decreased from 1800 to 1060. This can also be explained by a graph.



- The change in equilibrium income due to a change in one of the components of autonomous expenditures is analyzed by the multiplier process. The increase in income level by a multiple due to the changes in autonomous expenditures is known as multiplier effect.
- Change of equilibrium due to the increase or decrease in autonomous expenditures is determined by the largeness of the multiplier.
- The coefficient that shows the amount of increase in equilibrium output with an increase of the autonomous expenditures of an economy by a particular amount is known as multiplier.
- The multiplier of a simple economy can be presented as below.

$$K = \frac{1}{1 - b} = \frac{1}{1 - MPC} = \frac{1}{MPS}$$

- In an economy with government involvement, assuming taxes are as autonomous the multiplier can be presented as below.

$$K = \frac{1}{1 - b} = \frac{1}{1 - MPC} = \frac{1}{MPS}$$

- There are three types of autonomous expenditures in an economy with government involvement.
 - Consumption expenditure

- Investment expenditure
- Government purchasers expenditure
- The change in the amount of national income due to a change in particular autonomous expenditure can be calculated with the multiplier.
- There are several types of multipliers.
 - Consumption expenditure multiplier
 - Investment expenditure multiplier
 - Government expenditure multiplier
 - Tax multiplier
 - Transfer multiplier
 - Balanced budget multiplier
- Government expenditure multiplier $K_G = \frac{1}{MPS}$
 (MPS= Marginal Propensity to Save)
- The government expenditure multiplier is the reciprocal of the marginal propensity to save.

Ex : $C = 200 + 0.8Y$

$I = 100$

(y) Equilibrium income = 1500

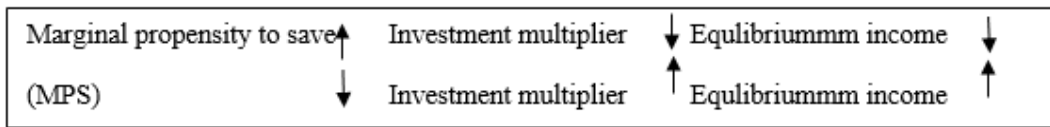
$$K_I = \frac{1}{1 - 0.8}$$

$$\begin{aligned} \text{Investment Multiplier} &= \frac{1}{0.2} \\ &= 5 \end{aligned}$$

- The change of equilibrium according to the largeness of the investment multiplier can be illustrated by a schedule.

Changes in investment (ΔI)	Investment expenditure (KI)	Current equilibrium Income (Y)	New equilibrium Income (Y)	Change of the equilibrium income (ΔY)
100	5	1500	1500+500=2000	500
100	10	1500	1500+1000=2500	1000

- The equilibrium income is changed due to the largeness of the investment multiplier.
- The largeness of the investment multiplier is determined by the marginal propensity to save.



- Government expenditure multiplier $K_G = \frac{1}{MPS}$

Ex : $C = 200 + 0.8Y$

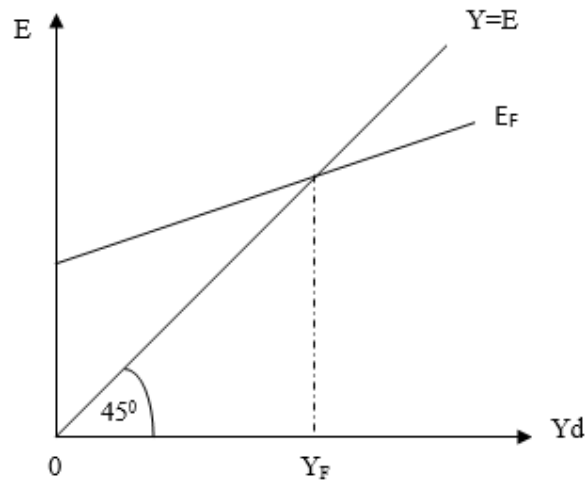
$$\begin{aligned}
 KG &= \frac{1}{1 - MPS} \\
 &= \frac{1}{1 - 0.8} \\
 &= \frac{1}{0.2} \\
 &= 5
 \end{aligned}$$

Tax Multiplier (KT)

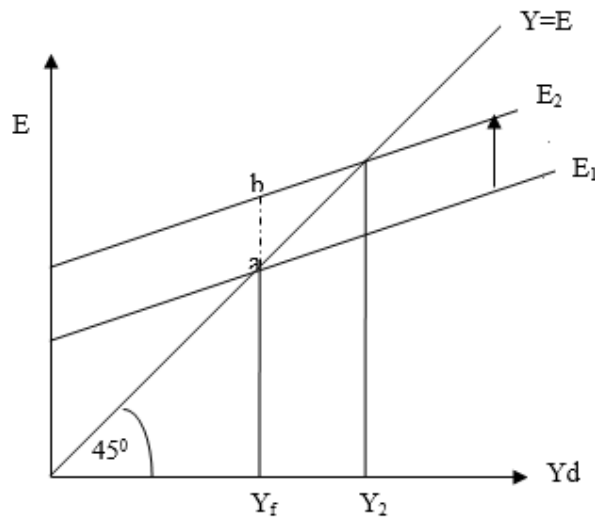
$$\begin{aligned}
 KT &= \frac{-b}{1 - b} \\
 &= \frac{-0.8}{1 - 0.8}
 \end{aligned}$$

$$= 4$$

- The tax multiplier shows the amount change in national output when autonomous expenditures are changed by some amount. An inverse relationship exists between autonomous taxes and national output.
 - The difference between the value of government expenditure multiplier and tax multiplier is equal to one. That is known as balanced budget multiplier. The value of multiplier balance budget multiplier where government revenue equals to government expenditure equals to one.
 - Which means when government expenditure and taxes are increased by the amount, the national income expands by the same amount of increase in government expenditures, A balanced budget creates an expansionary effect over the economy.
 - This happens due to the production expansion of increase in government expenditures is being greater than the contraction effect of increasing the tax revenue .
 - Example When government expenditures and autonomous taxes are increased by Rs. 50 million. Equilibrium income of the economy expands by Rs. 50 million.
 - Government expenditure multiplier (K_G) = $1/(1-b) = (1/0.2) = 5$
 - Government tax multiplier (K_t) = $-b/(1-b) = (-0.8/0.2) = -4$
- $$(\Delta Y) = K_G \times \Delta G + K_t \times \Delta T$$
- $$(\Delta Y) = 5 \times 50 + (-4 \times 50)$$
- $$(\Delta Y) = 250 + -200$$
- $$\underline{(\Delta Y) = 50}$$
- At a particular economy If there is an aggregate demand level equals to the potential output or full employment level it is known as the full employment level of equilibrium output. It can be shown by the graph below.

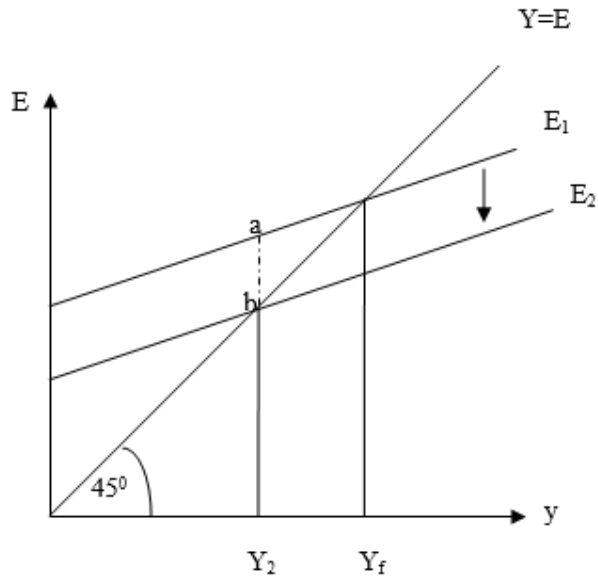


- The output level Y_f in the above graph shows the full employment level of macroeconomic equilibrium. There the full employment output level is equal to the aggregate demand. Then there is no inflationary or disinflation gaps.
- In some situations where actual aggregate expenditures exceeds the expenditures needed to full employment level an inflationary gap can occur.
- It can be shown by the flowing graph.



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- In the above graph Y_f refers to the full employment level and Y_2 refers to the macroeconomic equilibrium output level of the economy. The curve E_2 represents the actual aggregate expenditure needed to full employment level of output and the curve E_2 shows the actual aggregate expenditure which exceeds the full employment level of output. The gap between a-b shows the inflationary gap.

- At some situations there is an actual aggregate expenditure which less than the expenditure needed to full employment level in the economy. It is a disinflationary gap situations.
- I can be shown by the flowing graph.



- According to the above graph point Y_f represent the full employment level of output and Y_2 shows the existing equilibrium output of the economy. Curve E_1 shows the expenditure needed for full employment output level and curve E_2 shows the actual aggregate expenditure which less than the full employment level of output. The gap between a-b represent the deflationary gap and $Y_f - Y_2$ shows the recessionary gap or unemployment gap.