Royal College - Colombo 07
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Grade 11 – Third Term Test – 2023 (February 2024)
11 ශ්‍රේණිය - තෙවන වාර පරීක්ෂණය - 2023 (2024 පෙබරවාරි)

කාලය : පැය 1
Time: 1 hour

Science I

34	E	I

Name: - ..... *class: -.....* *Index no: - .....*

- Answer all questions.
- In each of the questions from 1 to 40, pick one of the alternatives 1, 2, 3, 4 which is correct or most appropriate.
- Mark a cross (×) in the number corresponding to your choice in the answer sheet provided.

1) What is the structure and functional unit of the main organ that carries out the nitrogenous excreta of man?
   1. the cell
   2. the neuron
   3. the nephron
   4. the nerve

2) What is the International System of unit (SI unit) of energy?
   1. $kgms^{-2}$
   2. Js^{-1}
   3. V
   4. J

3) Particles that can be described as nucleons are,
   1. proton and electrons
   2. electrons and neutrons
   3. proton and neutrons
   4. only neutrons

4) Propane burns and form carbon dioxide gas and water as shown in the equation below,

   …$C_3H_{8(g)}$ + …..$O_{2(g)}$ → …..$CO_{2\,(g)}$ + ……$H_2O_{\,(l)}$

   What coefficients are required to balance the equation?

	$C_3H_{8(g)}$	$O_{2(g)}$	$CO_{2\,(g)}$	$H_2O_{\,(l)}$
1	1	3	3	4
2	1	5	3	4
3	2	5	6	8
4	2	6	6	8

5) What is the correct statement regarding the cell organelle given below?

   1. only found in plant cells.
   2. the organelle is surrounded by a membrane.
   3. produce secretory substances.
   4. important for protein synthesis.

6) What is the situation where multiple collinear forces act in opposite directions?
   1. in the tug of war.
   2. when pulling a fishing net.
   3. pushing a stopped car.
   4. in a hanging fluorescent lamp.

7) Which of the following has polar covalent bond?

1. O_2 2. HF 3. H_2 4. N_2

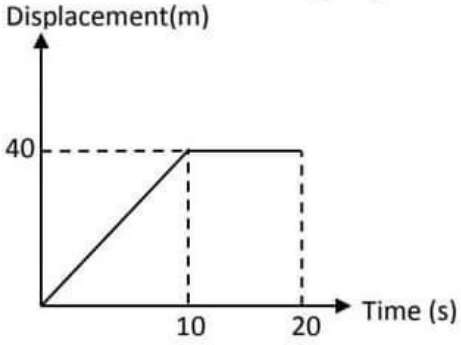
8) The following characteristics were observed in a certain cell type.

- There is a cavity in the middle of the cell.
- Lignin is present on the cell wall.

Cell type with these characteristics are,

1. collenchyma
2. parenchyma
3. companion cell
4. sclereids

9) Here is the displacement time graph of the motion of an object. Motion nature in time ranges up to 0 – 10s and 10s – 20s are,



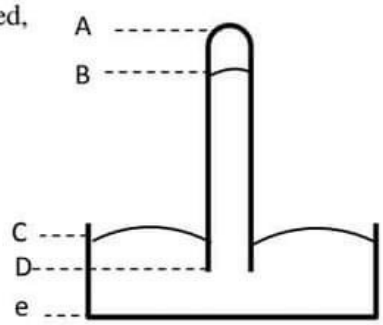
1. 4 ms^{-2} uniform acceleration and 40 ms^{-1} uniform velocity.
2. 4 ms^{-1} uniform velocity and at rest.
3. 40 ms^{-2} acceleration and at rest.
4. 4 ms^{-1} non uniform velocity and 40 ms^{-1} uniform velocity.

10) Some of the bioprocesses are given below. A reaction where biocatalysts are used is,

1. transportation
2. transpiration pull
3. gas exchange during respiration
4. when converting starch to maltose

Time 0

11) The several levels of a mercury barometer are shown as A, B, C, D and E. In which of the following height the atmospheric pressure, is correctly represented,



1. AC
2. BC
3. AD
4. BE

12) Three iron metal bands are connected with three metals zinc, copper and lead separately. Which ion is always formed when these bands come in contact with water and oxygen?

1. Fe^{2+} 2. Fe^{3+} 3. H^+ 4. OH^-

13) Consider the following statements regarding a case of human anaerobic respiration.

A) Always ethyl alcohol and carbon dioxide are produced.
B) There is a high gain in ATP.
C) Glucose becomes lactic acid.

Which of these statement/s is/are true?

1. only A
2. only A and B
3. only B and C
4. only C

14) Two vessels contain 44g of carbon dioxide gas and 32g of oxygen gas. Which statement is correct regarding the number of carbon dioxide and oxygen molecules contained in these? (C=12, O=16)

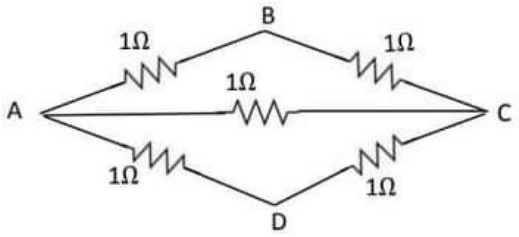
1. both vessels contain 6.022×10^{23} each.
2. there are $2 \times 6.022 \times 10^{23}$ of CO_2 and 6.022×10^{23} of O_2
3. there are $44 \times 6.022 \times 10^{23}$ of CO_2 and $64 \times 6.022 \times 10^{23}$ of O_2
4. both vessels contain 1.2044×10^{24} each.

15) What is the key structural component of plant?

1. protein
2. cellulose
3. lipids
4. glycogen

16) Equivalent resistance between two points A and C in the circuit shown in figure is,

1. 5 Ω
2. 1.5 Ω
3. 0.5 Ω
4. 3 Ω



17) Name the tissues that contribute to transportation and translocation in a tree respectively.

1. epidermis tissue and phloem tissue
2. xylem tissue and phloem tissue
3. cambium tissue and phloem tissue
4. sclerenchyma tissue and parenchyma tissue

18) Compound MX_2 has ionic bonds. Which of the following statements are true about M and X?

A – M is an element of the second group of the third period.
B – X is a nonmetal.
C – M forms divalent cations.

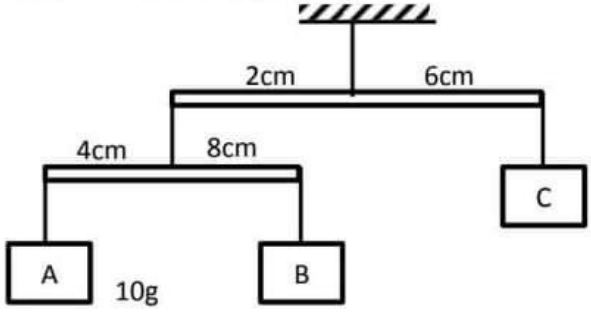
1. only A
2. only A and B
3. only A and C
4. A, B and C all

19) Phase of the uterus during the ovulation in ovary under the influence of luteinizing hormone is,

1. menstrual phase
2. after the menstrual phase and initial stage of proliferation phase
3. secretory phase
4. final stage of proliferation phase and initial stage of secretory phase

20) The figure shows three masses A, B and C connected by vertical strings to two light horizontal rods. If the mass of A is 10g, state the masses of B and C respectively.

1. 5g and 10g
2. 15g and 20g
3. 10g and 5g
4. 5g each



21) What is/are the anode reaction when fused sodium chloride and sodium chloride solution are electrolyzed separately?

A) $Na_{(s)} \rightarrow Na^{+}_{(l)} + e$

B) $2Cl^{-}_{(aq)} \rightarrow Cl_{2(g)} + 2e$

C) $4\ OH^{-}_{(aq)} \rightarrow 2\ H_2O + O_2 + 4e$

1. A and B
2. A and C
3. only B
4. only C

22) How does the Antidiuretic hormone (ADH) help to regulate the amount of water in human body?

1. reduces the reabsorption in nephron
2. increase water reabsorption in the kidneys
3. increase excretion of urea
4. thirst reduction

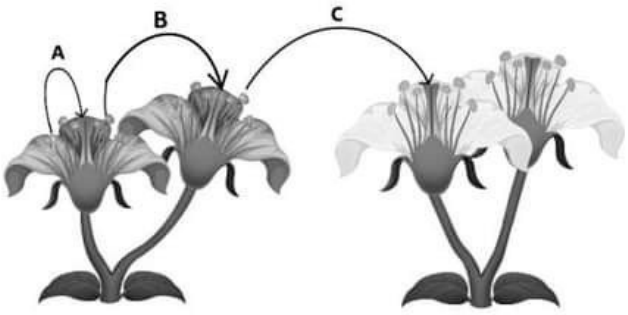
23) Which of these compounds is formed by combining ionic bonds and covalent bonds?

1. H_2
2. HCl
3. Na_2SO_4
4. NaCl

24) In order to turn a turbine in a hydroelectric plant water must have a kinetic energy of 20,000 joules per second. If the speed of water flowing from the reservoir to above the turbine is 100g per second, how high should the reservoir be located from the turbine?

1. 100 m
2. 20 m
3. 40 m
4. 80 m

25) A, B and C indicate three stages of pollination.



The flower of the plant of species P The flower of the plant of species Q

A – self pollination B – cross pollination C – cross pollination

Which of the above statements is true?

1. only A
2. only B
3. only A and B
4. all A, B and C

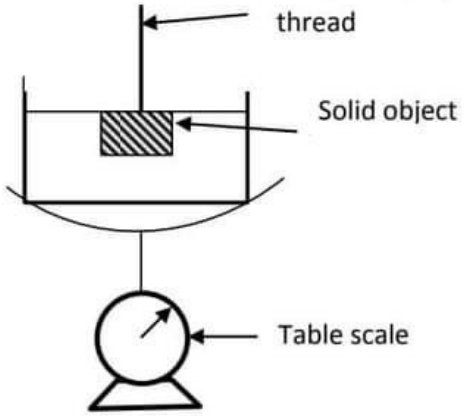
26) A sodium hydroxide solution is made by dissolving 10g of sodium hydroxide in 72g of water. What is the mole fraction of sodium hydroxide in the solutions?

1. 0.06
2. 0.05
3. 0.045
4. 0.25

27) Ingestion of heavy metals affects the enzymatic reactions of organisms. Which of the following metal is not considered as a heavy metal?

1. Fe
2. Hg
3. As
4. Pb

28) As shown in the figure a water beaker is placed on a compression balance and a solid object is suspended in it just below the water level. The object is then slowly lowered into the beaker until it lands on the bottom of the beaker. Then the scale reading is displays as,



1. the reading gradually increases with time and then becomes constant.
2. remains constant over time and decreases at once and become constant value.
3. gradually decreases with time and then increases at once and reaches a constant value.
4. remaining constant over time, increasing at once and then become constant.

29) Consider the following statements regarding an energy pyramid.

A) Energy pyramids are never become inverted.

B) The upper bar is shorter in length than the lower bar because there is only 10% gain from one energy level to the next.

C) There is no energy dissipation when energy flow from one tropic level to another tropic level.

Which of the above statement/s is/are correct?

1. only A
2. only A and B
3. only A and C
4. only B and C

30) Which of the following statement is true regarding neutralization between acids and bases?

1. neutralization occurs only between a strong acid and a strong base.
2. acidic salts are formed by the reaction between strong acids and strong bases.
3. in neutralization, the system in which the reaction takes place is always cooled.
4. water is always formed and the reaction is exothermic.

31) Select the molecules with atoms that have electron deficiency to complete octate.

1. NH_3, BF_3, and CCl_4
2. $AlCl_3$, BF_3, and CO_2
3. $AlCl_3$, BF_3, and $BeCl_2$
4. BF_3, NH_3 and CCl_4

32) Consider the following statements regarding hydrocarbons

A) Alkanes are less reactive than alkenes

B) Unlike alkanes, alkenes have a double bond.

Out of above statements,

1. both A and B statements are false.
2. statement A is not explained by statement B
3. both statements A and B are true and B explains A
4. of the statements A and B, only B is true

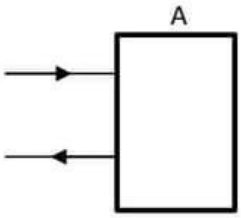
33) The organ secretes the Antidiuretic hormone (ADH) which is important for maintaining water balance in humans?

1. from pituitary
2. from the adrenal glands
3. from the pancreas
4. by the thyroid

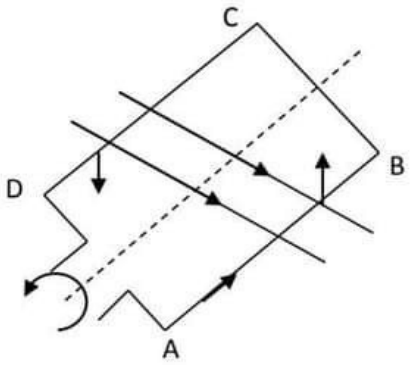
34) The following figure shows the path of a light ray passing through an optical device.

Here device A is,

1. a plane mirror
2. a concave lens
3. a prism
4. a convex lens



35) A coil of an alternating current dynamo which rotate anticlockwise is shown in figure. Which statement is correct about the type of alternating current produced?



1. at this point current approaches zero.
2. maximum current can be obtained at this position, because maximum amount of magnetic field lines are cut by the coil.
3. maximum current is reached when the coil is rotated 90 degrees.
4. a maximum current can be obtained only when the magnetic field lines are not crossed by the coil.

36) The false statement from the following for the genetic disease thalassemia is,

1. a condition caused by a mutation in the gene that affects hemoglobin production on a sex chromosome.
2. the production of hemoglobin in the blood is impaired in this condition.
3. the homozygous tt condition is the disease state and the Tt is the carrier condition.
4. marriage between blood relatives, which is common in some areas of Sri Lanka, affects this situation.

37) Energy produced in aerobic and anaerobic respiration is stored in ATP. At what instance is the ATP gain is heighest?

1. when yeast grows in a sugary solution.
2. in anaerobic respiration in animals.
3. in aerobic respiration that occurs during seed germination.
4. during the lactic acid fermentation process in animals.

38) Which statement is false regarding genetically modified organisms (GMO) and food produced by using genetic engineering?

1. to prevent the damage caused by the larva which damage maize pods
2. development of golden rice to overcome vitamin A deficiency.
3. production of Insulin by E coli bacteria.
4. detection of endemic diseases by DNA fingerprinting technology.

39) The mass of iron in kilograms which can be extracted by reducing 3200kg of Fe_2O_3 from mineral hematite is ?

1. 2240 kg
2. 1120 kg
3. 560 kg
4. 112 kg

40) The conclusion that can be reached by one who thinks extensively about the development of science and technology is,

1. can led to a comfortable lives, with wealth & power.
2. it was possible to prevent life – threatening diseases like Covid.
3. increasing the damage caused to human rights, environment and animals by sophisticated technological weapons and war activities to an bearable level.
4. always moving towards the prosperity of the world through the benevolent activities of man.

Grade 11– Third Term Test – 2023 (February 2024)
11 ශ්‍රේණිය - තෙවන වාර පරීක්ෂණය - 2023 (2024 පෙබරවාරි)

කාලය : පැය 3
Time: 3 hours

Sciene II

34	E	II

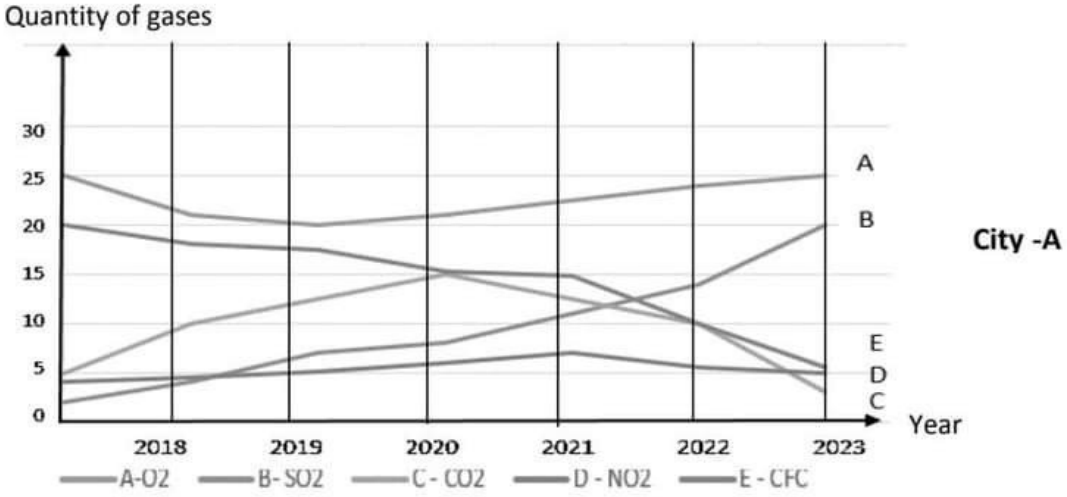
Name: - ..... *class: -*..... *Index no: -* .....

Instructions:-

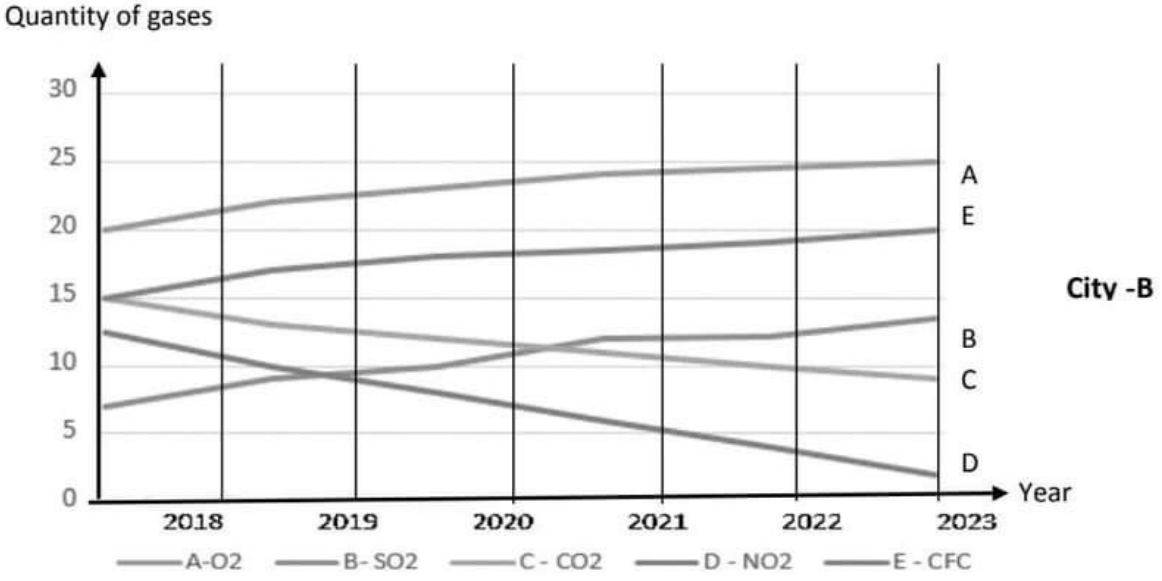
- Answer all questions in part A in the space provided.
- Answer only three questions out of the five questions given in part B.
- Attach the answer scripts of part A and B together and hand over.

Part A

1) A) Given below are two graphs plotted for the analysis of atmospheric conditions over two cities in two countries.



City -A



City -B

I. Out of the two cities, which city has lower air pollution?

.....(01 mark)

II. There are a number of industries in city A that use coal and petroleum fuels. Gas evolved from them causes acid rains when dissolve in water.

a. What is the most abundant component in acid rains?

.....(01 mark)

b. Write down two (02) adverse effects of acid rains? .....

.....

..... (02 marks)

III. Out of the two cities, which city would have agreed with the Montreal protocol?

..... (01 mark)

IV. Which city shows beneficial effects to environment due to large scale reforestation over the last couple of years?

..... (01 mark)

V. Which layer of the Earth is most affected due to the emission of greenhouse gases in large scales?

..... (01 mark)

B) Most of the Sri Lankans had to face with severe conditions within the last few years due to global pandemic situations and economic crisis. As a result of a power crisis people had to wait in long queues for petroleum oils, gases… etc.

I. What do you mean by an energy crisis?

..... (01 mark)

II. Mention two reasons for an energy crisis.

.....

..... (02 marks)

III. State two solutions to overcome an energy crisis.

.....

..... (02 marks)

IV. Renewable energy sources can be used as sustainable energy forms. Mention two renewable energy sources.

.....

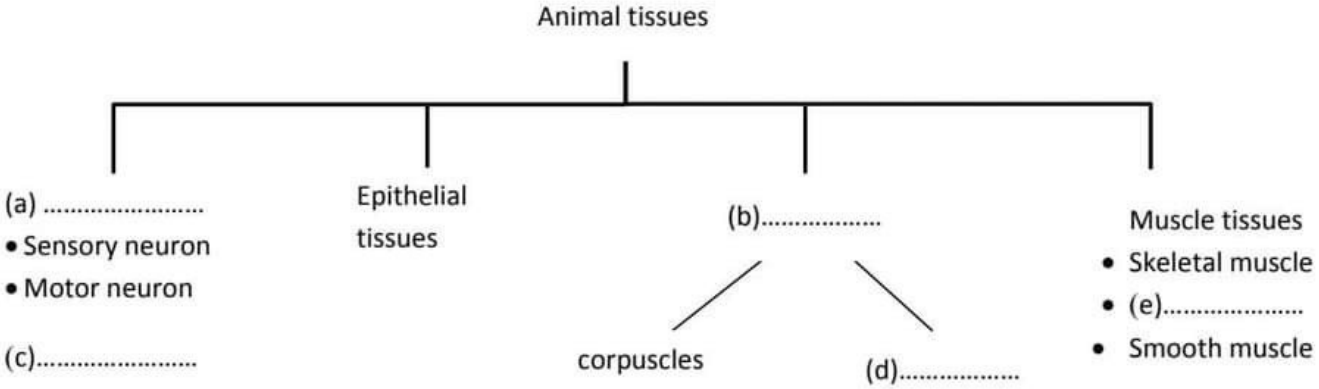
..... (02 marks)

V. Mention the names of two government institutions that regulate laws and regulations about environmental management which will operate under Ministry of Environment affairs.

.....(01 mark)

(15 marks)

2) A) A group of cells with a common origin which is adopted to perform a specific function or functions is considered as a tissue. Following chart illustrates about animal tissues.



I. Name (a), (b), (c), (d) and (e) parts.

.....

.....

..... (05 marks)

II. Mention one useful and useless substance that transported by tissue (b)

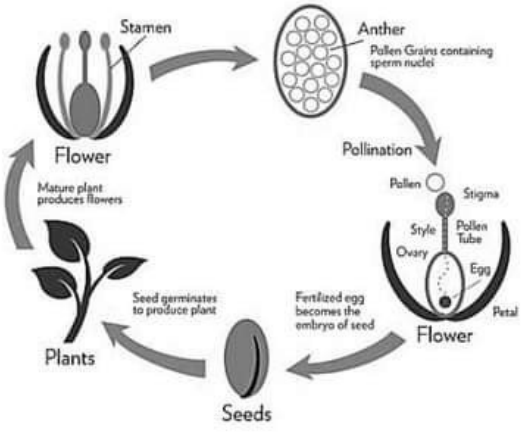
Useful .....

Useless ..... (2 marks)

III. Name the functional unit of the human nervous system

..... (01 mark)

IV. Following diagrams illustrates the pollination and fertilization of a flower.



a. What is meant by pollination?

.....

..... (01 mark)

b. Write down the changes take place in each of the floral parts after the fertilization.

a). Ovary .....

b). Fertilized ova ..... (02 marks)

V. What is parthenocarpy?.....

..... (01 mark)

VI. Mention two methods to overcome the seed dormancy, with examples.

.....

..... (01 mark)

VII. Following are some features of fruits and seeds.

A – porous and fibrous fruit cover/ pericarp
B – presence of spiny structures
C – showing attractive colours
D – presence of air filled shells

a) A characteristic/ characteristics in fruits and seeds which are dispersed by water is/ are,

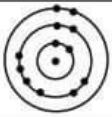
..... (01 mark)

b) A characteristic/ characteristics in fruits and seeds which are dispersed by wind is/ are,

..... (01 mark)

(15 marks)

3) A) Students have studied about the following elements in a group activity. following table summarizes the details that they introduce. Symbols given in the table are not standard symbols. Use the given symbols to write the answers.

Atomy Element	Structure	Number of Protons	Number of Neutrons
P		1	0
Q		4	5
R		8	8
S		9	9
T		12	12

I. Mention the two elements belonging to the same group of the periodic table.

.....(01 mark)

II. Write down the symbol of the element in 2nd period and group 6. .....

.....(01 mark)

III. Write down the element T in the standard form.

..... (01 mark)

IV. What is the chemical formula of the compound formed between Q and S?

.....(01 mark)

V. Protium is one of the isotope of element P. Name the other two isotopes and write them down in standard form. .....

..... (02 marks)

VI. Write down the chemical formula of the phosphate of element Q. .....

.....(01 mark)

B) Compounds which are formed by the elements by reacting with oxygen are called oxides.

I. Write down a balanced chemical equation for the reaction of sodium with oxygen in air.

..... (01 mark)

II. The product of the above reaction is dissolved in water. Mention the solution formed by it is either acidic or basic.

..... (01 mark)

III. Mention the colour of the above solution when tested with phenolphthalein?

..... (01 mark)

IV. Write down the chemical formula of the amphoteric oxide which is formed by 3rd period elements of the periodic table. ..... (01 mark)

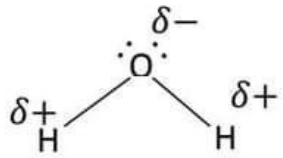
V. Draw the Lewis structure of carbon dioxide molecule.

(01 mark)

VI. According to the above structure, how many lone electron pairs are there?

.....(01 mark)

VII. Following is the polarization of a water molecule.



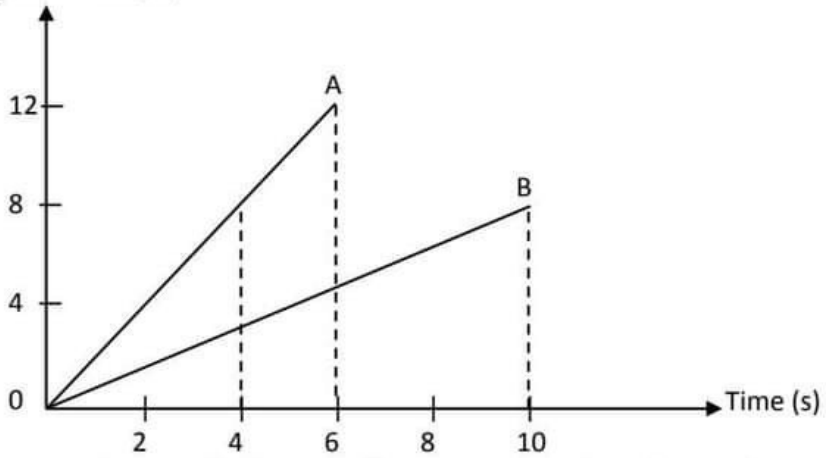
As a result of the polarization there are inter molecular bonds among water molecules. Mention two specific properties of water owing to inter molecular bonds.

.....

..... (02 marks)

(15 marks)

4) A) displacement (m)



Displacement – time graphs for two objects named as A and B are given above.

I. Calculate the velocity of the object A.

.....

..... (02 marks)

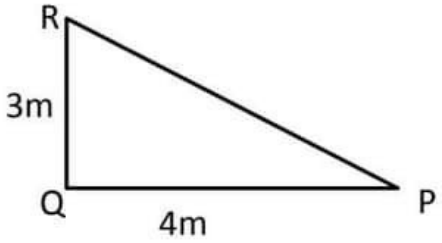
II. How long will it be taken by the object A to make the same displacement of object B?

(01 mark)

III. The object A in the above graph rested for next 2 (two) seconds and returned back to the starting point in two seconds. Draw the displacement – time graph for the whole journey.

(02 marks)

B)



A boy with a body mass of 60 kg has walked along the above inclined plane from P to R. He has spent 1 minute for it.

I. What is the weight of the boy?

..... (01 mark)

II. Calculate the work done by the child.

.....

..... (03 marks)

III. Find his power.....

..... (02 marks)

IV. When the boy reaches to a point called "C" he is given with a ball of 500g mass. Calculate the potential energy of the ball. .....

.....

..... (02 marks)

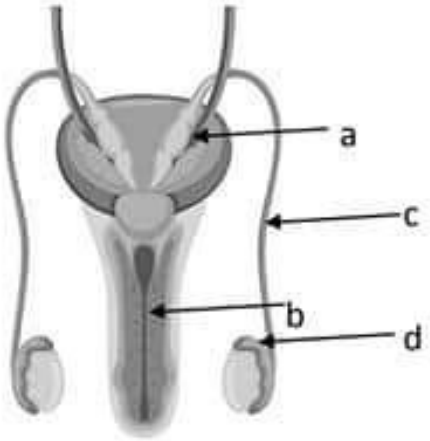
V. Ball is released from the point C and it has a kinetic energy of 4J. Calculate the velocity of the ball.....

..... (02 marks)

(15 marks)

Part B

5) A) Reproduction is a process that is essential for the existence of organisms.



I. Name the parts A, B, C in the above figure. (02 marks)

II. Write the function of the part named as d. (01 mark)

III. Name the hormone that secreted by pituitary gland which affects to control ovulation of females. (01 mark)

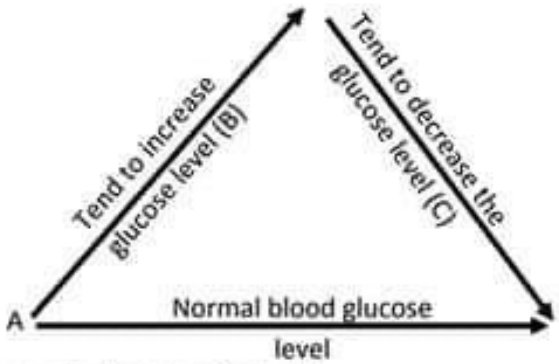
IV. Write the name of male gametes of plants and animals. (01 mark)

V. Name the stages of the Menstrual Cycle in which following changes take place.

a. Formation of new cells in the inner wall of the uterus and development of new blood vessels. (01 mark)

b. Bursting the matured Graafian follicle and releasing the ovum towards the fallopian tube.(01 mark)

B) There are several processes that affect on the glucose level of blood and change the level of glucose in a healthy person.



I. What is the normal glucose value in A? (01 mark)

II. Write a change occurs in a healthy person during the state C. (01 mark)

III. Which endocrine gland is activated in state B and C? (01 mark)

IV. Explain what homeostasis is. (01 mark)

V. How does anti diuretic hormone concentration change when water content in blood is increased? (01 mark)

C) Cerebrum, Cerebellum, Medulla Oblongata, Thalamus and hypothalamus are main parts of the human brain.

I. Which part of the brain performs the given functions?

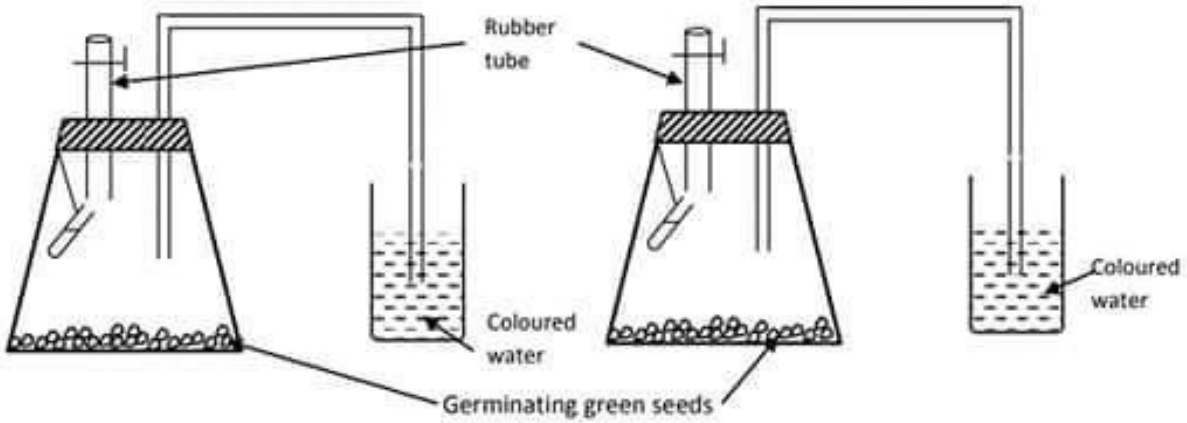
a. Memory and intelligence
b. Controlling heart beat
c. Maintain the respiratory rate
d. Controlling the voluntary muscle contractions
e. Maintenance of body temperature
f. Sensory perception (03 marks)

II. Which organ in the central nervous system performs the following reflex actions?

a. Changing the size of the pupil according to the light intensity (01 mark)

b. Removing hand when touching a hot object (01 mark)

D) A set of apparatus arranged to check the characteristics of organisms are given below.



I. What is the aim of this activity? (01 mark)

II. For which purpose the rubber tubes have been used in the apparatus? (01 mark)

III. Write an assumption made during this activity. (01 mark)

(20 marks)

6) A) A burning feeling and itching occurs when "Kahabiliya" (stinging nettle) get contacted on skin.

I.

a. Which chemical compound in "Kahabiliya" (stinging nettle) affects on above feeling? (01 mark)

b. Mention whether the chemical mentioned in (a) above is acidic or basic. (01 mark)

II.

a. Name a substance suitable to apply when (stinging nettle) Kahabiliya get contacted on skin.(01 mark)

b. Explain how does the pain reduce when the substance you mentioned in (a) above is applied on skin. (01 mark)

III. There are two types of litmus as red and blue.

a. As what type of material litmus is used? (01 mark)

b. Write the colour of litmus papers in acidic and basic mediums separately. (01 marks)

IV. The temperature of the medium slightly increases when acid and base reacts together.

a. Explain the reason for increasing the temperature using the energy contained in reactants and products. (01 mark)

b. How the above acid base reaction is classified considering the heat change? (01 mark)

c. Write the balanced chemical equation for the reaction between dil. sodium hydroxide and hydrochloric acid. (01 mark)

B) Solubility of sodium chloride in 25^0C is given as 36g / 100 g

I. What is meant by above sentence? (01 mark)

II. Write two factors affect on solubility of NaCl in water. (01 mark)

III. Explain briefly how solubility is applied when extracting salt from sea water. (02 mark)

IV. Gas bubbles are emitted when the lid of a soda bottle is opened. Explain the above incident using the knowledge of solubility. (01 mark)

C) The concentration of a saline solution should be very accurate when preparing it.

I. What is the name used for the solutions which the concentration is very accurately prepared?(01 mark)

II. Name 4 laboratory equipments used to prepare such solutions. (02 marks)

III. 250 cm^3 of Sodium Hydroxide solution with the concentration of 1$moldm^{-3}$ is needed to be prepared. (H=1, O=16, Na=23)

a. Find the mass of Sodium Hydroxide needed. (01 mark)

b. State the method of preparing the solution in four steps. (02 marks)

(20 marks)

7) A) Three vessels of Silver, Black and White coloured are kept in a place where receives more sunlight evenly for about 20 minutes. They contain equal volumes of water at 28^{0}C. The readings of thermometers in each vessel after 20 minutes were as follows.

Vessel	Temperature ^{0} C
Silver	32
White	33
Black	38

I. Briefly explain the reason for changing the temperature as above (01 mark)

II. Which electromagnetic wave type is included in heat radiations? (01 mark)

III. Write three features of electromagnetic Waves (03 marks)

IV. What is the other main type of wave which changes from electromagnetic waves? (01 mark)

V. All musical instruments are sources of sound, which can produce sound.

a. Name the type of wave to which sound can be included from transverse and longitudinal.(01 mark)

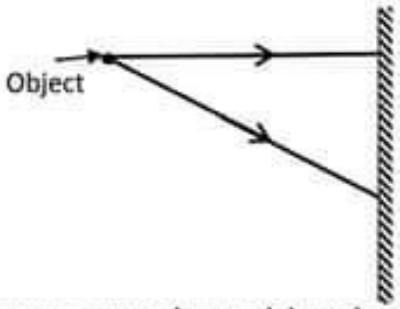
b. There are three characteristics of sound. Name two of them. (02 marks)

B) A plane mirror which is fixed in the middle of vehicle is used by the driver to see back.

I. Which type of mirror is used as side mirrors of vehicles? (01 mark)

II. What is the reason for using the above type of mirror than plane mirrors? (01 mark)

III. Light rays emitted by a point object which is kept in front of a plane mirror are given in the figure.



a. Copy down this in your answer sheet and draw the ray diagram to show the image of that point object. (02 marks)

b. Write three characteristics of that image. (02 marks)

IV. In which type of mirrors the features and position of image changes according to the position of object? (01 mark)

V. State one instance where the above mentioned mirror is used. (01 mark)

C) Due to a problem related to the system control room of the Ceylon electricity board, the electricity was cut off in the Island wide.

I. What is the name of the wire used to supply electricity to the domestic electric circuits from national grid? (01 mark)

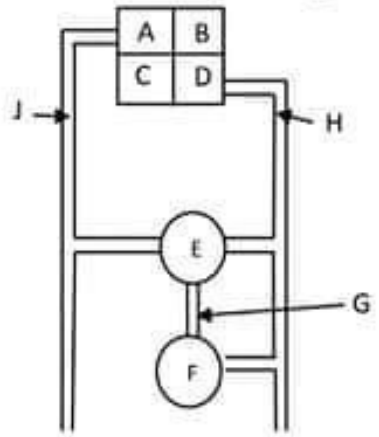
II. What is the reason for connecting the overload circuit breaker to the above cable before it connecting to the domestic electric circuit? (01 mark)

III. Which equipment is used in old circuits, instead of overload circuit breaker? (01 mark)

IV. Which wire in the electric supply get disconnected when the overload circuit breaker is disconnected? (01 mark)

(20 marks)

8) A) A rough sketch of human blood circulatory system is given below. Letter F represents small intestine.



I. Name the organ, and vessel named as B and H. (01 mark)

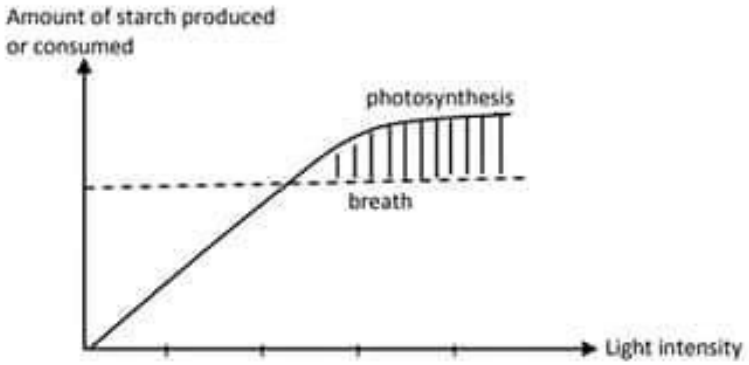
II. As which compound additional glucose get deposited in E after transported from digestive system? (01 mark)

III. How many times a glucose molecule, Which leave the organ E passes through the organ which contains A, B,C and D parts, before it reaches the organ E? (01mark)

IV. Write one structural difference between the vessels J and H. (01 mark)

V. Identify the vessel G and write its name. (01 mark)

B) The following graph represents the amount of starch produced during photosynthesis or starch spent for respiration in y axis, and light intensity in x axis.



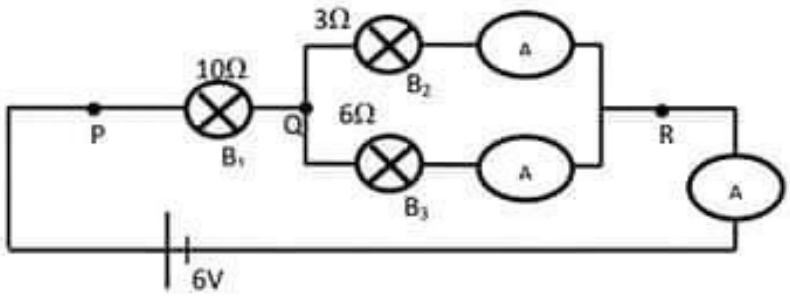
I. Which reaction speed increase when increasing the amount of light intensity in plants? (01 mark)

II. What is the relationship between respiration and light intensity? (01 mark)

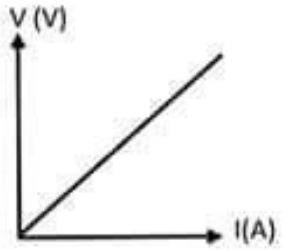
III. What kind of change occurs to the products inside shaded part of the graph? (01 mark)

IV. Write the balanced chemical reactions for above two processes. (01 mark)

C) The figure shows a circuit which consists of bulbs with a resistance. (Ignore the resistance of connecting wires)

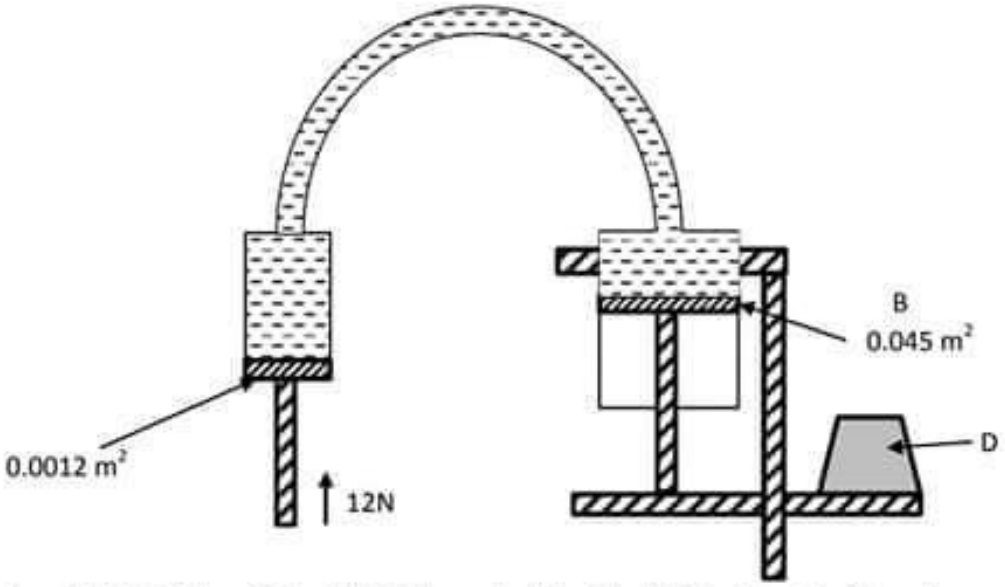


I. Calculate the equivalent resistance between P and R. (01 mark)
II. Find the potential difference between P and Q. (01 mark)
III. If the bulb B_2 burns off, calculate the current flow through the circuit. (01 mark)
IV. Which law can be introduced according to the graph given below which represents the change of current against potential difference. Write that law. (01 mark)

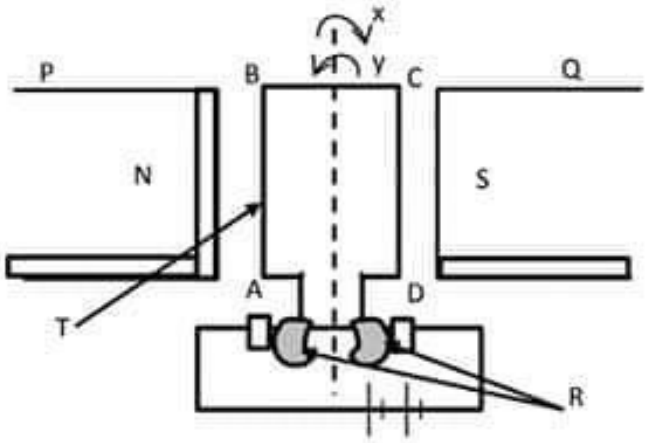


V. Write the relationship between V and I in a mathematical equation according to the graph. (01 mark)
VI. Write two factors affect on the resistance of a conductor. (01 mark)

D) Pressure caused due to force exerted at one end is transmitted to the other end through a liquid as liquids are not compressible.



I. Calculate the weight of D which can be lifted by 12 N load on the piston A. (01 mark)
II. Give example for the usage of above type of a system. (01 mark)
III. A diagram of direct current motor is given below.



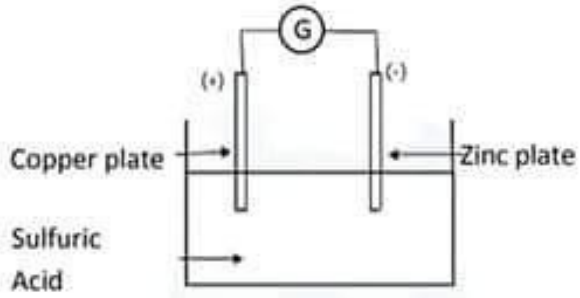
a. Name the parts R and T (01 mark)

b. To which direction the above motor rotates out of x and y, when current is supplied to it?(01 mark)

c. Copy down the following graph in your answer script and represent how current varies according to time in a direct current. (01 mark)

(20 marks)

9) A) An instance where chemical energy changed in to electrical energy is given in the following diagram.



I. Give a name that can be used for above apparatus. (01 mark)

II. Write two observations that can be observed near electrodes. (01 mark)

III. A chemical change occurs when an electric current flows through an electrolyte.

a. State a name that can be used for the chemical change occurs inside the electrolyte. (01 mark)

b. Write two applications of the above process. (02 marks)

B) Metals get changed when they are exposed to atmosphere.

I. What is the name used to identify such changes occur on metals? (01 mark)

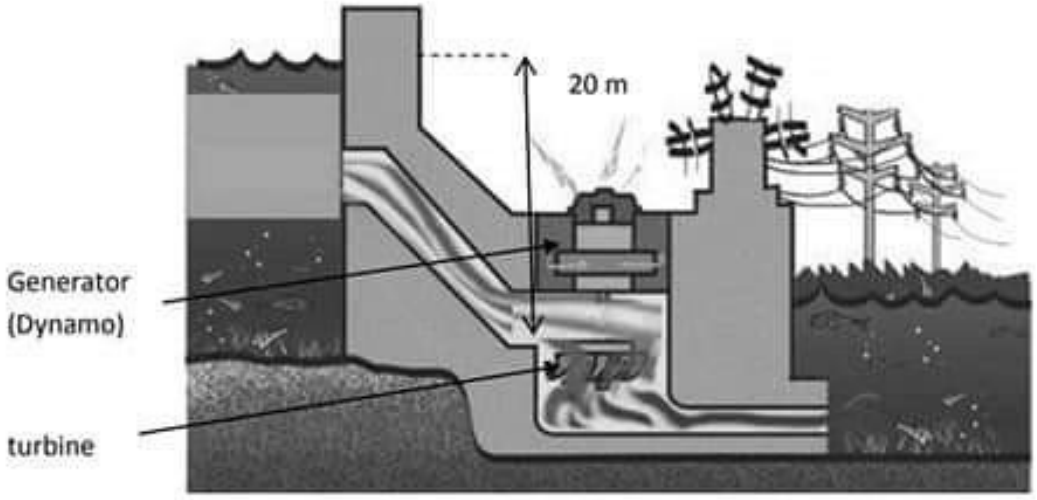
II. Iron or steel substances get rusted when they are exposed to atmosphere.

a. State the colour of rust. (01 mark)

b. Name two factors necessary for rusting. (01 mark)

c. Write two methods of preventing rusting. (01 mark)

C) Following diagram illustrates a part of a hydropower station used in Sri Lanka to generate electricity.



I. What is the type of energy stored in water in the reservoir? (01 mark)

II. Calculate the amount of energy you mentioned in part (1) in 1000kg of water. ($g = 10ms^{-2}$) (02 marks)

III. Find the velocity of water directed to turbine by the tunnel. (02 marks)

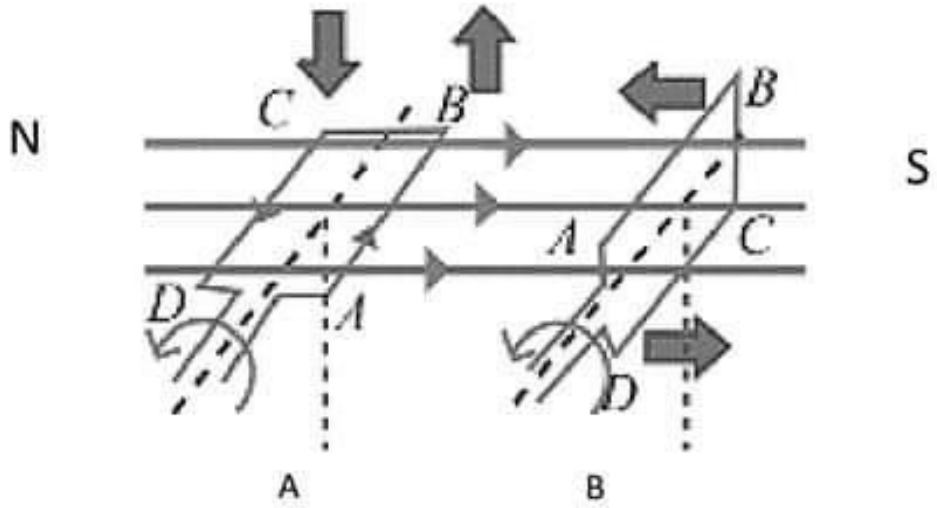
IV. If 1000kg of water is released towards the turbine in 5s, calculate the rate of generating electricity in terms of kW, by the generator. (Assume there is no energy loss) (02 marks)

V. Electricity generated by the AC generator is stepped up using a transformer.

a. What is the reason for it? (01 mark)

b. Write one difference between alternating current and direct current. (01 mark)

VI. An AC generator is used to generate electricity in the above power station. Following diagram illustrates two instances of the armature in the magnetic field.



a. Which instance generates the maximum induced current? (01 mark)

b. What is the reason for your answer? (01 mark)

(20 marks)