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2562 – Mulika Piriven Final Examination – 2018 December

(New Syllabus)

NEW

11 E I, II

(11) General Science – Paper I, II

Three hours

2018.12.29 / 08.30–11.40

Additional Reading Time - 10 minutes

Use **additional reading time** to go through the question paper, select the questions and decide on the questions that you give priority in answering.

General Science – Paper I

Note :

* Answer **all** questions. This paper carries **40** marks.
* In each of the questions from No. **1** to **40**, pick one of the alternatives (1), (2), (3), (4) which is **correct or most appropriate.**
* **Mark a cross (x) on the number corresponding to your choice in the answer sheet provided.**
* Further instructions are given on the back of the answer sheet. Follow them carefully.

1. Sapumal observed a plant with a branched stem and broad leaves having reticulate venation in his home garden. Which of the following could be that plant?
   (1) mango (2) coconut (3) kitul (4) arecanut

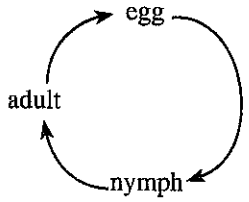
2. An animal considered to be belonging to phylum mollusca is
   (1) sea anemone (2) earthworm (3) squid (4) scorpion

3. Which of the following microbial species is used in making dairy products?
   (1) bacteria (2) viruses (3) protozoans (4) algae

4. What is the constellation known by the names 'seven sages' and 'plough'
   (1) Canis major (2) Ursa major (3) Orion (4) southern cross

5. Consider the following statements *A*, *B* and *C* about solar eclipses.
   A – sun disappears because the shadow of the moon falls on earth.
   B – solar eclipses occur on full moon days.
   C – observing solar eclipses by the naked eye is dangerous
   of the above, the true statements are,
   (1) *A* and *B* only. (2) *A* and *C* only. (3) *B* and *C* only. (4) All *A*, *B* and *C*.

6. Which following organization shows a metamorphosis of the type indicated in the figure.



   (1) mosquito
   (2) house fly
   (3) butterfly
   (4) cockroach

[See page two.

7. Consider the following statements about an ecosystem.

   A – There are interactions between living organisms and living organisms.

   B – There are interactions between living organisms and non-living factors.

   C – Sinharaja forest is an example for an ecosystem.

   Of the above, the true statements are,

   (1) *A* and *B* only. (2) *A* and *C* only. (3) *B* and *C* only. (4) All *A*, *B* and *C*.

8. Consider the following statements *A*, *B* and *C* about parasitism which is a biological interaction.

   A – This is advantageous only for one organism and disadvantageous for the other organism.

   B – This relationship is a positive interaction.

   C – Hookworm is a parasite living in the human alimentary canal.

   Of the above, the true statements are,

   (1) *A* and *B* only. (2) *A* and *C* only. (3) *B* and *C* only. (4) All *A*, *B* and *C*.

9. In bio–diversity conservation, in which of the following in situ–conservation **cannot** be effected?

   (1) sanctuaries (2) zoological gardens(3) wetlands (4) strict reserves

10. Which natural disaster has caused the biggest damage to lives and property during the past ten years in Sri Lanka?

    (1) flood (2) landslide (3) lightening (4) drought

11. As scientists have revealed, a reason that is considered for the rapid increase in disaster conditions in the current world is

    (1) pollution of oceanic waters.

    (2) destruction of the forests.

    (3) scarcity of food and water.

    (4) increase in global warming.

12. In an instance of a tsunami disaster, a natural forewarning that can be observed is

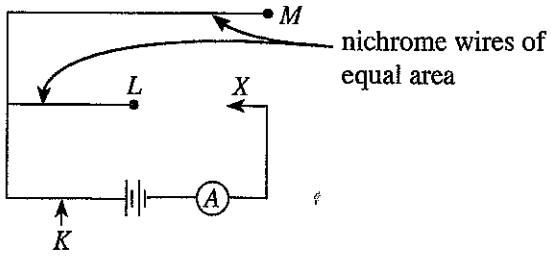
    (1) the formation of a strong blow of wind.

    (2) receding of sea waves exposing the shore.

    (3) lightening with thunder.

    (4) emergence of large sea waves at once.

13. In the circuit shown in the figure, the end *X* was once connected to end *L*, then to end *M* and readings of ammeter *A* were taken. Of the readings which following statement could be correct?



    (1) The reading obtained when connected to *M* is greater than the reading when connected to *L*.

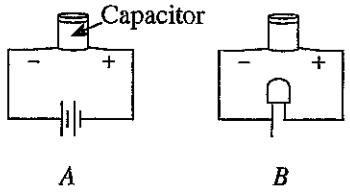
    (2) The reading obtained when connected to *L* is greater than the reading when connected to *M*.

    (3) The readings are equal in both the instances when connected to *M* or *L*.

    (4) If ammeter *A* is connected to point *K* as in the figure, the readings in the two instances are equal.

[See page three.

14. Figures *A* and *B* show two stages of using a capacitor. Which of the following statements is more correct about those two stages?



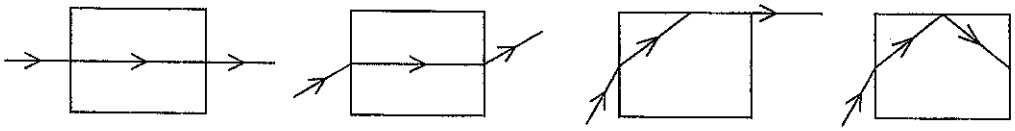
A *B*

(1) *A* is discharging stage while *B* is charging stage.
(2) *A* is charging stage while *B* is discharging stage.
(3) Both *A* and *B* are charging stages.
(4) Both *A* and *B* are discharging stages.

15. Which of the following statement is correct about a day cell when an electric current flows?
(1) Electrons flow from the positive terminal to the negative terminal.
(2) Positive charges flow from the positive terminal to the negative terminal.
(3) Electrons flow from the negative terminal to the positive terminal.
(4) The direction of the conventional current is the direction of the flow of electrons.

16. Pay attention to the two instances *A* and *B* below.
A – When a pebble is dropped on water, ripples are generated.
B – When a bell is tolled, a person at a distance hears the sound.
The forms of waves transmitting energy in the two instances *A* and *B* respectively are,
(1) transverse waves and longitudinal waves.
(2) longitudinal waves and transverse waves.
(3) longitudinal waves and longitudinal waves.
(4) transverse waves and transverse waves.

17. The following figures indicate ray diagrams in several instances where light passes through a block of glass. Of them, which one shows the total internal reflection?



(1) (2) (3) (4)

18. Energy is transmitted in the form of light rays through very thin, transparent fibres known as optical fibres. An instance where such fibres are **not** used is
(1) internet connections (2) telecommunication
(3) decorative illuminations (4) sound transmission

19. Given below are three statements as *A*, *B* and *C* about human coordination.
A – Occurs through nerves as well as through hormones.
B – Body functioning adjusts according to changes in the external environment only.
C – Coordination occurs between receptors and effectors.
Of the above the true statements are,
(1) *A* and *B* only. (2) *A* and *C* only. (3) *B* and *C* only. (4) All *A*, *B* and *C*.

20. Consider the following statements about the blood tissue of humans.
A – Blood belongs to the class of connective tissues.
B – Blood consists of blood corpuscles and a plasma.
C – In blood transfusion, blood of any individual can be given to another person.
Of the above the true statements are,
(1) *A* and *B* only. (2) *A* and *C* only. (3) *B* and *C* only. (4) All *A*, *B* and *C*.

[See page four.

21. In a certain type of plants blue flowers is the dominant character while white flowers is the recessive character. The gene/allele for blue flowers is *B* and the gene/allele for white flowers is *b*. Which of these used be the genetic composition of a plant with white flowers belonging to that verity of plants?
(1) *BB* (2) *bb* (3) *Bb* (4) *bB*

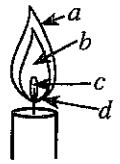
22. The plum-pudding model of the atom was put forward by
(1) J.J. Thomson. (2) Earnest Rutherford.
(3) Niels Bohr. (4) Dmitri Mendeleef.

23. What is the correct chemical formula of ammonium carbonate?
(1) NH_4CO_3 (2) $(NH_4)_2CO_3$ (3) $NH_4(CO_3)_2$ (4) $(NH_4)_3(CO_3)_2$

24. What is the relative molecular mass of $CaCO_3$?
(Ca = 40, C = 12, O = 16)
(1) 68 (2) 100 (3) 124 (4) 204

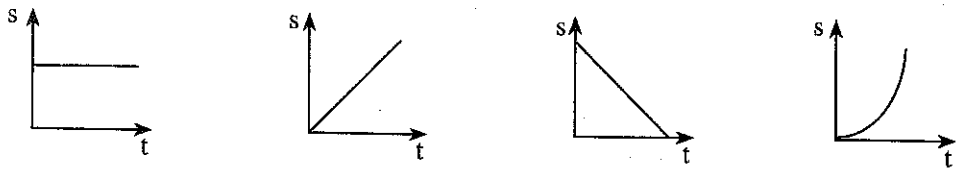
25. Which of the following compounds **cannot** be used to prepare oxygen in the laboratory?
(1) calcium carbonate (2) potassium permanganate
(3) hydrogen peroxide (4) potassium chlorate

26. Given here is a sketch of a candle flame. Its luminous zone and the non-luminous zone are represented respectively by,



(1) *a* and *b*.
(2) *a* and *d*.
(3) *b* and *c*.
(4) *c* and *d*.

● Questions No. **27** and **28** are based on the following displacement time graphs. (Time is indicated as 't' and displacement as 's')

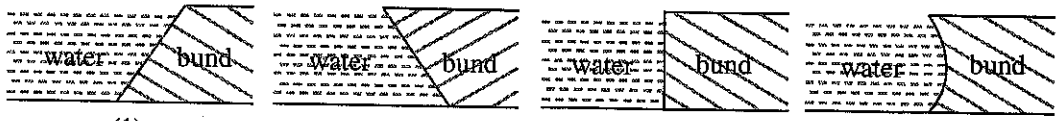


A *B* *C* *D*

27. Displacement in a unit time (rate of change of displacement) is called velocity. Which of the above graphs illustrate a uniform velocity to the direction of s?
(1) *A* (2) *B* (3) *C* (4) *D*

28. The rate of change of velocity is called acceleration. Which is the distance time graph relevant to the fall to the ground of a fruit detached from its stalk?
(1) *A* (2) *B* (3) *C* (4) *D*

29. When the depth of a liquid increases, the pressure also increases. Which of the following figures illustrates the shape of the bund of a tank that is suitable to minimize the damage caused to the bund due to the pressure of water in the tank?



(1) (2) (3) (4)

[See page five.

30. In which of the following the atmospheric pressure is **not** involved?
    (1) sucking up a drink by a straw
    (2) drawing water using a pully
    (3) taking ink with an ink-filler
    (4) filling a syringe with water.

31. The element used to vulcanize rubber is
    (1) carbon. (2) sulphur. (3) silicon. (4) phosphorus.

32. Which is **not** a product related to limestone?
    (1) cement (2) bleaching powder (3) calcium carbide (4) sulphuric acid

33. Which is the most abundant gas in atmospheric air?
    (1) nitrogen (2) oxygen (3) argon (4) carbon dioxide

34. The technique commonly used to extract essential oils is,
    (1) steam distillation.
    (2) crystallisation.
    (3) fractional distillation.
    (4) centrifuging.

35. What is the most suitable fire extinguisher suitable to extinguish a fire broke out due to leakage of electricity?
    (1) water fire extinguisher
    (2) foam fire extinguisher
    (3) carbon dioxide fire extinguisher
    (4) halon fire extinguisher

36. Which of the following is **not** a covalent compound?
    (1) carbon dioxide
    (2) methane
    (3) ammonia
    (4) magnesium oxide

37. Which of the following shows the electronic configuration of the atom neon correctly?
    (1) 2 (2) 2 , 6 (3) 2 , 8 (4) 2 , 8 , 8

38. The chemical compound contained in vinegar is
    (1) acetic acid.
    (2) formic acid.
    (3) hydrochloric acid.
    (4) nitric acid.

39. Which gas is brought into contact with calcium hydroxide in making bleaching powder?
    (1) ammonia
    (2) argon
    (3) chlorine
    (4) carbon dioxide

40. When putting firewood into the fireplace it is better to split a log into pieces and put into the fire rather than putting the log as a whole. Which of the following option best explains the reason for this scientifically?
    (1) Collision with oxygen increases after splitting fire wood into pieces as it increases its surface area.
    (2) Catching fire fast because putting and packing firewood in the fireplace becomes easy.
    (3) Receiving temperature essential for combustion quickly.
    (4) Making the catalysts react easily which speed up combustion.

(01 × 40 = 40 marks)

**

Question. No.	Marks
1(i)	
1(ii)	
1(iii)	
1(iv)	
Total	

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Department of Examinations, Sri Lanka

2562 – Mulika Piriven Final Examination – 2018 December

NEW (New Syllabus) **11 E I, II**

(11) General Science – Paper I, II

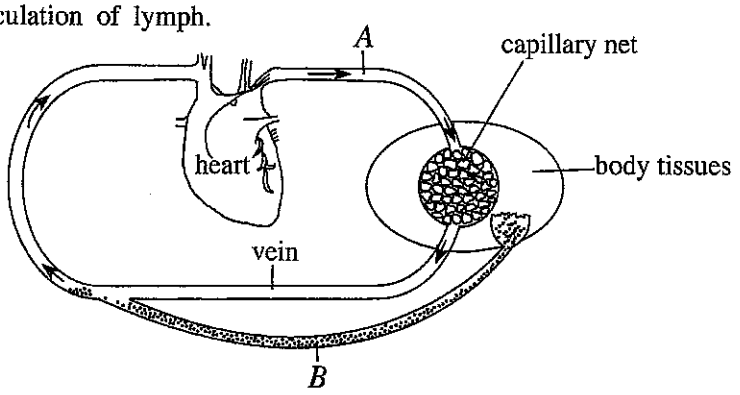
General Science – Paper II

* Answer **all** questions in part **I** and **four** questions in part **II**.
* Answer part **I in this paper itself** and attach with the answer script of part II and handover.

Index No : .....

Part I

1. (i) Given below is a simple diagram indicating the relationship between the circulation of blood and the circulation of lymph.



(a) Name the structures labelled *A* and *B*. *(02 marks)*

A : .....

B : .....

(b) Name **two** blood components which do **not** diffuse from the capillary net to the cells of the body tissues. *(02 marks)*

.....

.....

(c) By what name is the fluid that enters the structure *B* from body tissues known? *(01 mark)*

.....

.....

(d) State **two** functions that are carried out by the fluid specifically stated in (c) above to protect the body from diseases. *(02 marks)*

.....

.....

[See page seven.

(e) Name the special structures present in the lymphatic system to fulfil the functions you mentioned in part (d) above. *(02 marks)*

.....

(f) State a place in where the specialized structures stated in (e) above occur in abundance. *(01 mark)*

.....

(ii) The weight of a stone was measured by suspending it in a spring balance as shown in Figure *A*. On the instance the weight of the stone was 50 g. Then the stone was immersed in a vessel containing water to the level shown in Figure *B* and the weight was recorded.

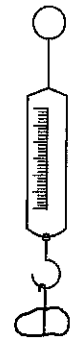


Figure *A*

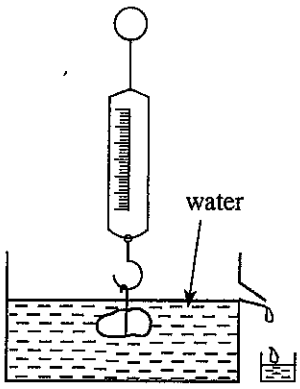


Figure *B*

(a) Will the spring balance reading be equal to or less than or greater than 50 g when the stone is immersed in water as shown in Figure *B*? *(02 marks)*

.....

(b) State the reason for the answer you gave for part (a) above. *(02 marks)*

.....

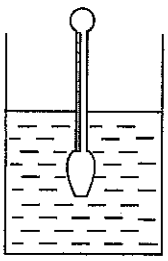
.....

(c) Which force is equal to the weight of the amount of water that was spilled from the vessel in the instance of *B*? *(02 marks)*

.....

.....

(d) When a hydrometer is immersed in water, it floats vertically as shown in the diagram. Which physical property of the liquid is indicated by the value recorded in the hydrometer at the level of the surface of water? *(02 marks)*



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.....

.....

(e) When the hydrometer is vertically immersed in water, the hydrometer reading at the level of the liquid was noted. Afterwards, the hydrometer was wiped well and immersed again in a vessel of coconut oil. Write a statement comparing the hydrometer reading when immersed in water and when immersed in coconut oil. *(02 marks)*

.....

.....

[See page eight.

(iii) Fill in the blanks in the following paragraph with the suitable words. *(05 marks)*

(a) Solid, liquid and gas are called three ..... of matter. Solids differ from liquids and gases as solids have a fixed ..... . Gases differ from liquids and gases as the gases do not have a fixed ..... Gaseous particles execute free ..... . The particles of a solid are more closely ..... .

(b) From the elements given below, select the element that matches with each given statement and write it **on the dotted line**. *(05 marks)*

Iron, Carbon, Sulphur, Aluminium, Copper

(I) Only one allotropic form conducts electricity. .....

(II) Known as '*gendagam*' in day-today life. .....

(III) Reacts with air and forms an oxide film which protects the metal from corrosion. .....

(IV) Forms a brown coloured oxide when exposed to air. .....

(V) Used to make the alloy brass. .....

(iv) Cycling of substances is essential for a balanced ecosystem. Water cycle (hydrological cycle) is one of them.

(a) Name **two** other such cycles seen in an ecosystem. *(02 marks)*

.....

.....

(b) Draw a figure indicating the water cycle using words and arrows only. *(04 marks)*

(c) Of the stages in the water cycle, state one stage in which water can be polluted. *(01 mark)*

.....

(d) Because of various activities carried out by man on the environment, its balance is disturbed. Write **two** such unfavourable activities. *(02 marks)*

.....

.....

(e) Write an action that should be taken by humans to prevent the increase in global warming. *(01 mark)*

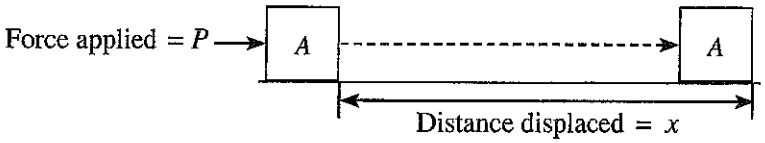
.....

**

[*See page nine.*

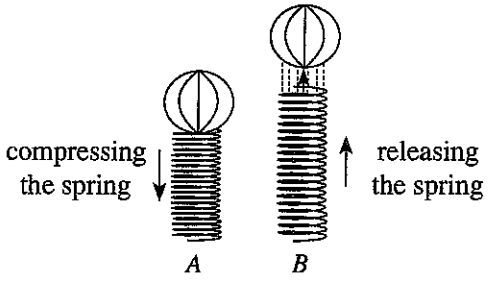
Part II

2. When a force is applied on an object, it may move or be displaced. If there is such a movement/ displacement, it is considered that work has been done.



(i) Write as an equation, an expression for the work done, (W) when moving/displacing the object A through a distance x by applying a force P as shown in the diagram. *(02 marks)*

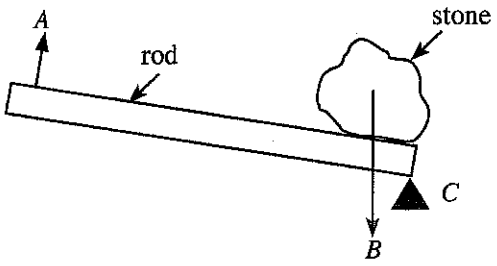
(ii) Energy is spent for doing work. By doing work energy can be stored and later work can be done by releasing energy. Here, one form of energy is converted to another form. The figure illustrates an instance in which a spiral spring is compressed and then released after placing a ball on it.



(a) What form of energy does the spring have in instance A? *(02 marks)*

(b) What form of energy does the spring have in instance B? *(02 marks)*

(iii) Simple devices used to facilitate day-to-day work are called simple machines. In them, in order to overcome a certain force or a **load**, a force is put in or an **effort** is applied. The effort rotates around a certain point and that point is the **fulcrum**. Given here is a diagram of an instance where a rod is used to move a stone. State in respective order, the letters used to indicate the fulcrum, the load and the effort. *(06 marks)*



(iv) Sketch a wheelbarrow carrying a weight and mark the fulcrum, the load and the effort in it. *(03 marks)*

(v) State **three** instances (excepting the above) where simple machines are used in every day life. *(03 marks)*

3. Figure A indicates the pattern made when a glass plate sprinkled–with a thin layer of iron filings is placed on a bar magnet.

(i) (a) By what name is the area in which iron filings are spread around the magnet known?

(b) Around the magnet, iron filings are arranged as a certain pattern of lines. By what name are these lines known. *(02 marks)*

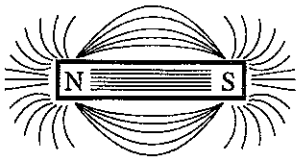


Figure A

(ii) As shown is Figure B, an insulated coil is connected to a centre-zero galvanometer while a bar magnet that can be introduced into the coil is kept near it. The bar magnet is introduced at once into the coil and kept unmoved. Later the magnet is taken out at once.

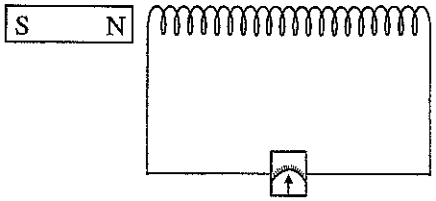


Figure B

(a) State how the indicator of the galvanometer deflect during this activity. *(03 marks)*

(b) What type of a current is generated in the coil when the magnet is introduced and withdrawn? *(02 marks)*

[See page ten.

(iii) Write **two** measures that can be taken to increase the deflection of the galvanometer. *(02 marks)*

(iv) By improving the set-up given in Figure *B* above and using a moving/rotating magnet, an equipment has been created to produce an electric current. Draw a sketch of that equipment illustrating its make and name its parts. *(06 marks)*

(v) You are provided with two identical soft iron rods, adequate amount of insulated wires, a centre-zero galvanometer, a battery and a switch. Draw a diagram of a set-up which can be used to demonstrate the generation of an induced electronic current with closely kept coils using those materials. *(05 marks)*

4. In Sri Lanka, saltern method is used to produce salt.

(i) (a) Name **two** places where salterns are located in Sri Lanka. *(02 marks)*

(b) Write **two** environmental factors that should be considered when selecting a site for constructing a saltern. *(02 marks)*

(ii) (a) Name the major source that provides energy for the production process in a saltern. *(02 marks)*

(b) Which compound precipitates first in the large tanks in a saltern? *(02 marks)*

(c) The chemical name of the slat produced by the saltern method is 'sodium chloride'. Write its chemical formula. *(02 marks)*

(d) Inclusion of chlorides and sulphates of which element is the reason for the bitterness of salt precipitated in small tanks? *(02 marks)*

(e) What is the name of the solution left after the precipitation of salt? *(02 marks)*

(iii) (a) Write **two** uses of salt. *(02 marks)*

(b) As a remedy for a certain nutritional deficiency of humans, potassium iodate is added to salt. Which nutritional deficiency is overcome by consuming such salt? *(02 marks)*

(c) What complaint would result in connection with the blood circulatory system by adding salt excessively to food? *(02 marks)*

5. Three methods used to prepare three samples of the gases oxygen, hydrogen and carbon dioxide in the laboratory are as follows.

A – Reacting zinc metal with dilute hydrochloric acid

B – Reacting calcium carbonate with dilute hydrochloric acid

C – Heating potassium permanganate

(i) Name the gases produced by the methods *A*, *B* and *C* above respectively. *(06 marks)*

(ii) (a) Indicate briefly how carbon dioxide gas can be identified in the laboratory. *(02 marks)*

(b) Write the observation of the experiment mentioned in above (ii) (a). *(02 marks)*

(c) Write **two** uses of carbon dioxide. *(02 marks)*

(iii) (a) Write **two** physical properties of oxygen gas. *(02 marks)*

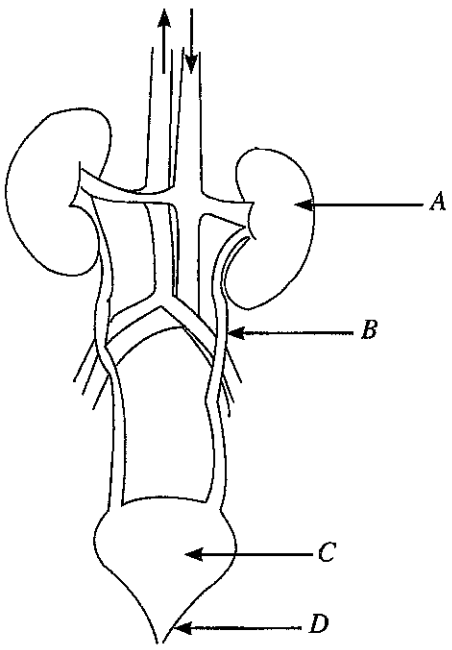
(b) Name **one** method by which oxygen is added to the atmosphere naturally. *(02 marks)*

(iv) (a) Indicate briefly how hydrogen gas is identified in the laboratory. *(02 marks)*

(b) What is the gas produced by reacting the most abundant gas in the atmosphere with hydrogen gas? *(02 marks)*

[See page eleven.

6. A sketch of the human urinary system is indicated below.



(i) (a) Name the parts *A*, *B*, *C* and *D* in the figure. *(04 marks)*

(b) State **two** nitrogenous excretory products produced due to the action of *A*. *(02 marks)*

(ii) (a) Nitrogenous excretion is a metabolic process. Introduce 'metabolism'. *(03 marks)*

(b) State **two** such metabolic processes occurring in animals. *(02 marks)*

(iii) (a) What is known as the functional and structural unit of *A*? *(02 marks)*

(b) (I) What is the substance that is 100% reabsorbed into blood in the production of urine in a healthy person? *(01 mark)*

(II) Name the illness caused by not absorbing the substance stated in (I) above. *(01 mark)*

(iv) State a function of *D* and a complaint that would occur in it. *(02 marks)*

(v) Write **three** good practices that should be followed for the proper functioning of the urinary system. *(03 marks)*

7. Given below are the diagrams of a typical animal cell and a typical plant cell.

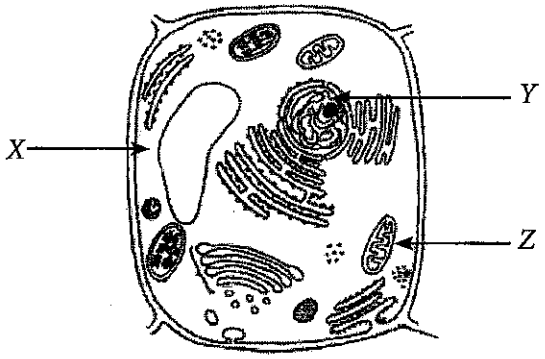


Figure *A*

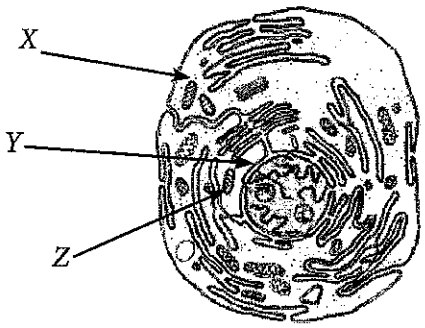


Figure *B*

(i) Name the typical cell type illustrated by Figure *A* and typical cell type illustrated by Figure *B* respectively. *(04 marks)*

(ii) State **two** special features of the plant cell that helped to distinguish it from an animal cell. *(02 marks)*

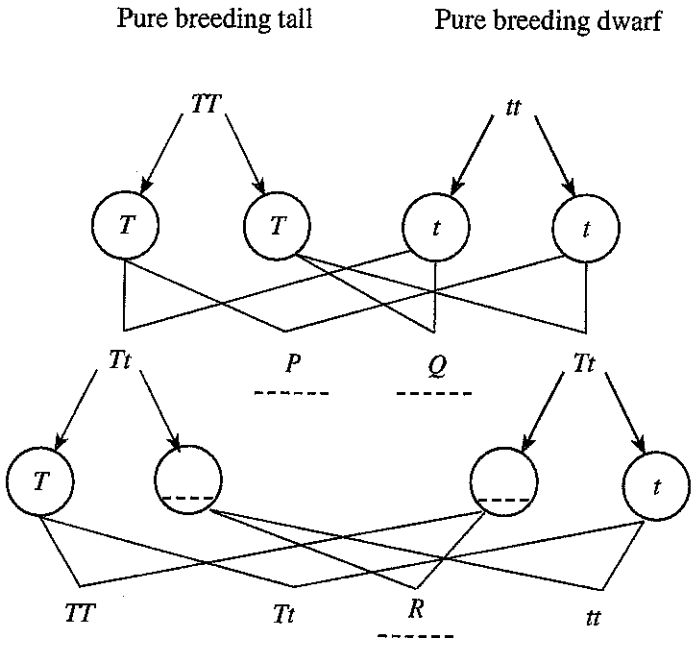
(iii) Name the parts labelled *X*, *Y* and *Z* in the above Figures. *(04 marks)*

(iv) (a) Which part of the cell transmits genetic information from generation to generation? *(02 marks)*

(b) By what name is the factor contained in that part causing genetic characteristics known? *(02 marks)*

[*See page twelve.*

(v) The results of an experiment on heredity are as follows. Tallness is represented by *T* and dwarfness is represented by *t*. The cross between a pure breeding tall plant (*TT*) and a pure breeding short plant (*tt*) are as follows.



(a) Indicate the gene combinations fetting into the blanks *P*, *Q* and *R* respectively. *(02 marks)*

(b) Indicate the ratio of the offspring with tall and dwarf characteristics in this cross. *(02 marks)*

* * *