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2564 – Mulika Piriven Final Examination – 2020(2021)

11 E I, II

(11) General Science – Paper I, II

Three hours

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.

Part I

1. The symbol of Standard international (SI) unit of measuring power or the rate of work is,
   (1) J (2) W (3) N (4) Pa

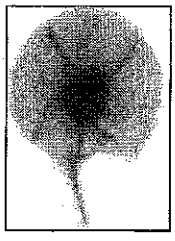
2. What is the vector quantity given below?
   (1) Velocity (2) Time (3) Speed (4) Distance

3. What is the organelle that generates energy in the cell?
   (1) Chloroplast (2) Vacuole (3) Nucleus (4) Mitochondrion

4. The agent of the present pandemic Covid 19 is a,
   (1) virus. (2) bacteria. (3) fungus. (4) protozoa.

5. The brightest planet in the night sky is,
   (1) Mars. (2) Venus. (3) Jupiter. (4) Saturn.

6. What is the agent of dispersion of the seed shown in the following diagram?
   (1) Wind
   (2) Animals
   (3) Water
   (4) Explosion



7. Who told first that there are exact orbits or shells, in which electrons are moving round the positively charged nucleus of an atom?
   (1) J.J. Thomson (2) Dmitri Mendaleev
   (3) Neils Bohr (4) John Dalton

8. The element below, that exists in solid state in atmospheric pressure and room temperature is,
   (1) Carbon. (2) Oxygen. (3) Nitrogen. (4) Neon.

[See page two.

9. How many neutrons are there in atom $^{35}_{17}Cl$?
   (1) 17 (2) 18 (3) 35 (4) 52

10. What is the chemical formula of sodium sulphate?
   (1) $NaSO_4$ (2) Na_2SO_4 (3) $Na(SO_4)_2$ (4) $Na_2(SO_4)_3$

11. What is the respiratory surface of man?
   (1) trachea (2) lungs (3) walls of alveoli (4) blood capillaries

12. What is the food item produced using micro-organisms?
   (1) Ice cream (2) Yoghurt (3) Bee's honey (4) Jaggery

13. It is advertised in a newspaper that a donor of blood group A is wanted. Accordingly what should be the blood group of the recipient?
   (1) A only (2) A or O (3) A or AB (4) O or AB

14. The characteristic that affects the pitch of sound is,
   (1) wave length. (2) magnitude. (3) shape of wave. (4) frequency.

15. The eyepiece and the objective of compound light microscope are respectively,
   (1) a concave lens and a concave lens. (2) a convex lens and a concave lens.
   (3) a concave lens and a convex lens. (4) a convex lens and a convex lens.

16. In which answer below, a string instrument, a percussion instrument and a wind instrument are given respectively?
   (1) Violin, flute and drum (2) Flute, violin and drum
   (3) Violin, drum and flute (4) Flute, drum and violin

● Kusal who tried to light the lamp of the shrine room of his home touched the flame accidentally. He took his hand away immediately. Answer the questions No. **17** and **18** based on this incident.

17. What is the sensory organ (receiver) of Kusal in this incident?
   (1) Eye (2) Nose (3) Ear (4) Skin

18. What acted as the stimulus in the above action?
   (1) Light energy (2) Touch
   (3) Chemical substance (4) Sound energy

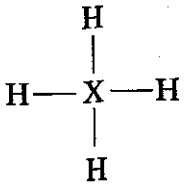
19. In a field trip, a student recorded his observations of an animal as below.
   a – There is an externally segmented body.
   b – There are jointed legs.
   According to the above description, what is the phylum that the animal belongs to?
   (1) Annelida (2) Mollusca (3) Arthropoda (4) Coelenterata

20. What is the biological process that is identical to plants?
   (1) Respiration (2) Photosynthesis (3) Locomotion (4) Reproduction

21. What is the compound below, which is **not** ionic?
   (1) Sodium chloride (2) Magnesium oxide
   (3) Calcium carbonate (4) Hydrogen chloride

[*See page three.*

22. The structure of a compound of the element X is given below. What can be the element X?



(1) C (Carbon)
(2) N (Nitrogen)
(3) O (Oxygen)
(4) Mg (Magnesium)

23. What is the correct statement about a capacitor?
(1) It acts as a signal amplifier.
(2) It acts as a switch.
(3) It converts alternating current to direct current.
(4) It stores electrical charges for a short period of time.

24. What is the true statement about a step-down transformer?
(1) Number of turns of the secondary coil is more than that of the primary coil.
(2) Direct current can be obtained from the secondary coil when alternating current is given to the primary coil.
(3) Voltage induced in the secondary coil is less than voltage given to the primary coil.
(4) Alternating current can be obtained from the secondary coil when direct current is given to the primary coil.

25. Consider the following statements *A*, *B* and *C*.
A – Presence of a combustible substance.
B – presence of a supporter of combustion.
C – Attaining the ignition temperature.
Which statements above give the essential factors for combustion?
(1) *A* and *B* (2) *A* and *C* (3) *B* and *C* (4) *A*, *B* and *C*

26. What is the main constituent chemical compound in lime stone?
(1) Calcium carbonate (2) Magnesium carbonate
(3) Calcium oxide (4) Magnesium oxide

27. What is the gas that accelerates the ripening of fruits?
(1) Nitrogen (2) Oxygen (3) Acetylene (4) Methane

28. What characteristic below is **not** inherited from parents to off springs?
(1) Height (2) Colour of eyes
(3) Level of intelligence (4) Language ability

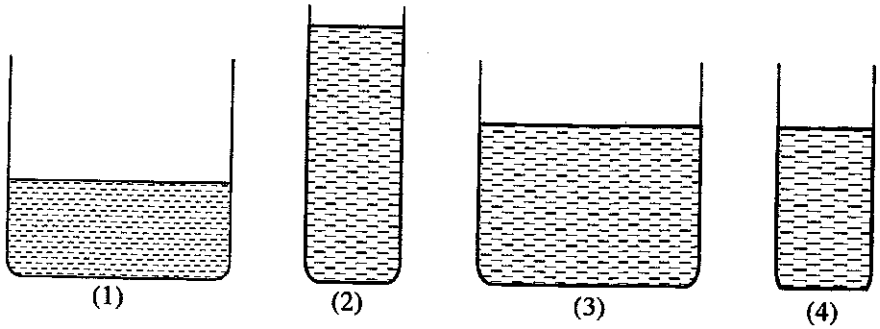
29. The sex-linked disease that is considered to be common in man is,
(1) Thalesemia (2) Red-green colour blindness
(3) Haemophilia (4) Leukaemia

30. An example for chemical change is,
(1) solid wax into liquid wax. (2) weathering of rocks due to heat.
(3) burning of a sheet of paper. (4) condensing water vapour to droplets.

31. In which answer below, that an imbalanced force is **not** in action?
(1) When an object is moving in uniform velocity on a straight line.
(2) When a moving object becomes to stand at rest.
(3) When an object at rest starts to move in uniform acceleration.
(4) When a moving object changes its moving direction.

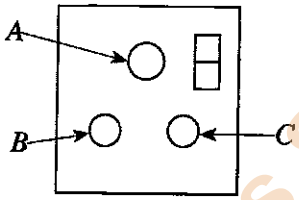
[*See page four.*

32. Following diagrams show several vessels containing the same liquid. Which vessel has the maximum liquid pressure on its bottom?



33. An electrical socket is shown in the diagram below. What is the correct answer about the wires connected to the terminals labelled as *A*, *B* and *C*?

	A	*B*	*C*
(1)	Earth	Live	Neutral
(2)	Live	Neutral	Earth
(3)	Neutral	Earth	Live
(4)	Earth	Neutral	Live



34. What is the simple machine, that the thread of a screw can be taken as an example?
(1) Inclined plane
(2) Liver of 1st order
(3) Liver of 2nd order
(4) Liver of 3rd order

35. What is the instance below, where a couple of forces is **not** applied?
(1) Turning a bicycle handle by both hands.
(2) Turning a stone using a crow bar.
(3) Closing a water tap by turning.
(4) Turning the steering wheel of a vehicle by both hands.

36. What is the reaction below that is an example for a chemical combination reaction?
(1) magnesium + oxygen $\xrightarrow{\triangle}$ magnesium oxide
(2) lead oxide $\xrightarrow{\triangle}$ lead + oxygen
(3) calcium carbonate $\xrightarrow{\triangle}$ calcium oxide + carbon dioxide
(4) zinc + sulphuric acid $\xrightarrow{\triangle}$ zinc sulphate + hydrogen

37. What is the **false** statement about natural rubber?
(1) Acetic acid is used to accelerate coagulation rubber latex.
(2) Vulcanized rubber is manufactured by reacting with carbon.
(3) Concentrated rubber latex is produced by centrifuging.
(4) It has elastic properties.

38. What is the natural disaster that can be detected by the information given by Richter scale?
(1) Earth quakes (2) Lightning (3) Droughts (4) Flood

39. What is the term used for conservation of organisms in environments which are similar to their natural habitats?
(1) In situ conservation
(2) Ex situ conservation
(3) Conservation of biodiversity
(4) Conservation of nature

40. What is the convention established in 1982 for the protection of ozone layer?
(1) Montrial convention
(2) Viena convention
(3) Ramsar convention
(4) Kyoto convention

[*See page five.*

*

049

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

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Department of Examinations, Sri Lanka

2564 – Mulika Piriven Final Examination – 2020(2021)

(11) General Science – Paper I, II
General Science – Paper II

11 E I, II

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

Index No:

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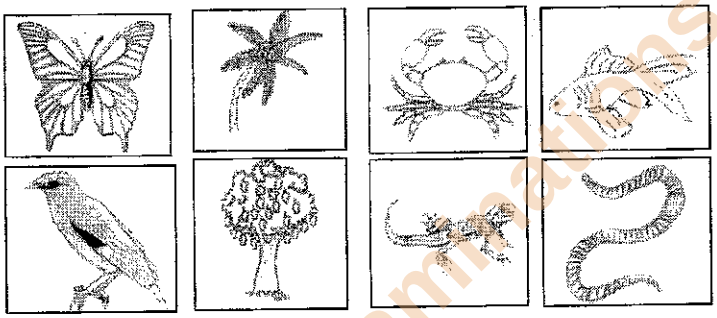
Part A

1. (i) Following are diagrams of several organisms observed in a home garden. Answer the following questions based on it.



(a) Which animal above has a dry scaly skin? Name the group that animal belongs. *(02 marks)*

(I) animal :- .....

(II) group :- .....

(b) Write **two** adaptations of fishes for their aquatic life. *(02 marks)*

(I) .....

(II) .....

(c) Out of the above animals, name **two** invertebrates belonging to the same phylum. *(02 marks)*

(I) .....

(II) .....

(d) Coconut tree is a monocotyledon, while mango tree is a dicotyledon. Write **two** differences between those plants. *(02 marks)*

(I) .....

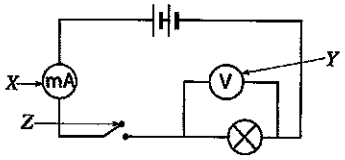
(II) .....

(e) Give **one** reason to justify the statement. "Earthworm is a friend of the farmer." *(02 marks)*

.....

[See page six.

(ii) Given below is a diagram of a circuit prepared for a certain activity in electricity.



(a) Name the equipments labelled as *X*, *Y* and *Z*. *(03 marks)*

X :- .....

Y :- .....

Z :- .....

(b) What are the physical quantities related to electricity, measured by using *X* and *Y*? *(02 marks)*

Measured using *X* :-.....

Measured using *Y* :-.....

(c) Mention how the readings of *X* an *Y* change when the number of cells in the circuit is increased. *(02 marks)*

Readings of *X* :- .....

Readings of *Y* :- .....

(d) What is the property of the equipment shown as ⊗ in the above diagram, given by the ratio of the quantities measured by *X* and *Y* ? *(02 marks)*

.....

(e) Name the law tested by the above activity. *(01 mark)*

.....

(iii) (a) Fill in the blanks of the following paragraph using appropriate words. *(05 marks)*

The first scientific study on atom was done by..... . There is an equal number of..... in energy levels around the nucleus of an atom, which are equal to the number of protons in the nucleus of the atom. The mass number of an atom is the sum of the number of protons and that of the..... in the nucleus. Though the atom is neutral as a whole, protons are..... charged. Two or more atoms of the same element or different elements combine together to form.....

(b) This question is based on the elements of the third period of the periodic table. Select the appropriate element out of those, for each of the following statements, and write the name of that element on the dotted line. *(05 marks)*

(Sodium, Magnesium, Aluminium, Silicon, Phosphorous, Sulphur, Chlorine, Argon)

(I) A corrosion - resistant metal .....

(II) An element with a stable electronic configuration .....

(III) A metalloid .....

(IV) Burns in air with a bright flame .....

(V) The element that has the highest electro-negativity .....

[*See page seven.*

(iv) It is observed that some human activities enhance the intensity of natural disasters.

(a) Write **two** human activities that cause droughts. *(02 marks)*

(I) .....

(II) .....

(b) Name **two** things that should be contained in a kit carrying with, when evacuating an area, on a tsunami alert. *(02 marks)*

(I) .....

(II) .....

(c) Mention **two** measures that can be taken to minimize land slides. *(02 marks)*

(I) .....

(II) .....

(d) Write **two** adverse phenomena that occur due to the addition of greenhouse gases to the atmosphere. *(02 marks)*

(I) .....

(II) .....

(e) What is the most influential environmental phenomenon, caused by human activities, that leads to dissolve the lime layer on a Dagaba? *(02 marks)*

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[*See page eight.*

Department of Examinations Sri Lanka

Department of Examinations Sri Lanka

Part B

2. Reflection as well as refraction of light is used to fulfil various human needs.

(i) Write the **two** laws on reflection of light. *(04 marks)*

(ii) An object of the height of 5 cm is kept before a plane mirror at a distance of 15 cm.

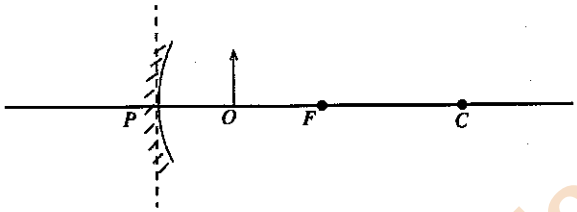
(a) What is the distance to the image of the object from the mirror? *(02 marks)*

(b) What is the height of the image? *(02 marks)*

(iii) Two plane mirrors are kept at an angle to each other and an object is kept between the mirrors. If five images are observed in both mirrors, what is the angle between the two mirrors? *(02 marks)*

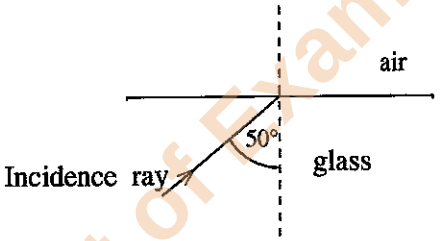
(iv) What is the type of mirrors used as side - mirrors of vehicles? *(02 marks)*

(v) Diagram below shows how an object (*O*) is kept before a concave mirror. Mention **three** characteristics of the image formed by this object. *(03 marks)*



(vi) Light changes its direction when it enters from one transparent medium to another transparent medium. What is the term used for this phenomenon? *(02 marks)*

(vii) Diagram below shows a light ray reaching the common surface between air and glass, through the medium of glass.



(a) Draw on your answer script, how the light ray travels after incidence on the common surface. (Critical angle of glass with respect to air is 42°.) *(02 marks)*

(b) Here, what is the phenomenon that light is subjected to? *(01 mark)*

3. Energy has various forms. Heat is one of those forms.

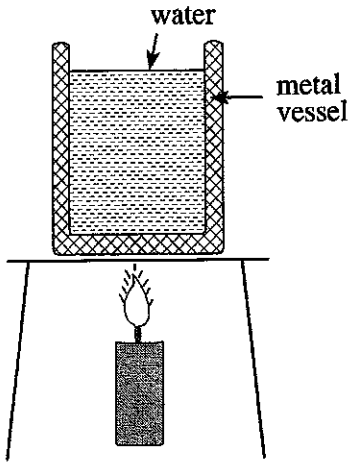
(i) Diagram shows how water in a metal vessel kept on a burner is heated. Mention how heat is transferred in each of the following instances.

(a) From outer surface to inner surface of the metal vessel.

(b) Through water from bottom to top.

(c) From the flame to a person standing beside.

(06 marks)



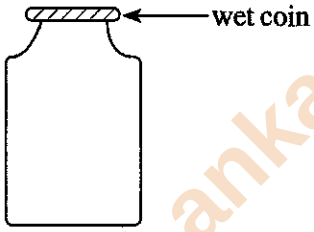
[See page nine.

(ii) Briefly explain scientific reasons for each of the following.

(a) A glass of hot coffee cools rapidly than a glass of hot milk, which are at the same temperature and have equal amounts. *(02 marks)*

(b) The bottom of an electric iron is made of metal but the handle of it is made of plastic. *(02 marks)*

(iii) It is shown here, how a wet coin is kept on the mouth of an empty bottle.

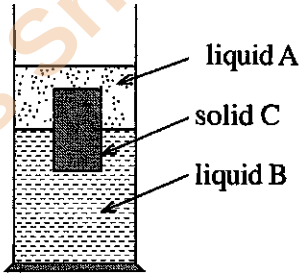


(a) What can be observed, when the bottle is holding by both palms for a while? *(01 mark)*

(b) Give reasons for your observations. *(02 marks)*

(iv) Density is defined as the mass of unit volume.

(a) What is the Standard International (SI) unit of density? *(02 marks)*



(b) Diagram shows how two immiscible liquids and a solid object are kept in a cylindrical vessel. Mention the ascending order of their densities. *(03 marks)*

(c) What is the equipment used to determine the density of liquids? *(02 marks)*

4. (i) Production of salt in salters is an example for a chemical industry in Sri Lanka.

(a) Write **two** environmental factors that should be considered when selecting an area to establish a salters. *(02 marks)*

(b) Name the main energy source that provides energy for the evaporation of sea water from a salters. *(01 mark)*

(c) Name the main chemical compound extracted from a salters and write its chemical formula. *(02 marks)*

(d) Salt gets wet when exposed to air. Compounds of which element, mixing with salt cause the wetting of salt? *(01 mark)*

(e) What is the purpose of adding potassium iodate to table salt? *(02 marks)*

(f) What is the adverse effect that can be occurred in the blood circulatory system as a result of adding excess amounts of salt with food? *(02 marks)*

(g) Name a chemical substance manufactured using salt as a raw material. *(02 marks)*

(ii) Manufacturing cement is an industry associated with lime stone.

(a) What are the **two** main raw materials used to manufacture cement, other than lime stone? *(02 marks)*

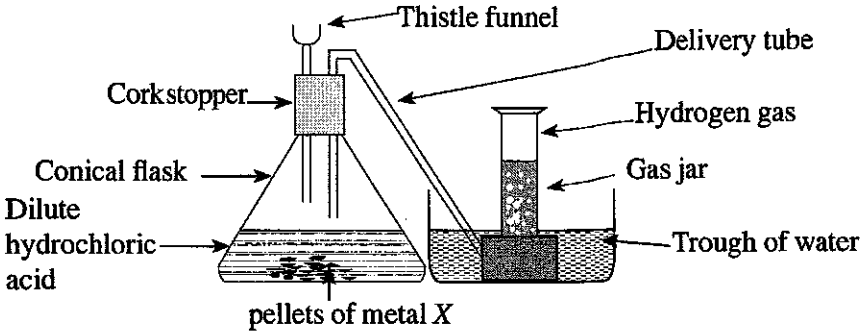
(b) There are two main compounds in clinker produced in the rotary kiln used in cement industry. One of them is calcium silicate. Name the other compound. *(02 marks)*

(c) What is the chemical compound added to clinker to control the hardening time of cement. *(02 marks)*

(d) Mention **two** uses of cement. *(02 marks)*

[*See page ten.*

5. Given below is a diagram of a set-up used to prepare hydrogen gas in the laboratory.



(i) (a) Name a metal that can be used as *X*. *(01 mark)*

(b) Name a defect in the set-up. *(02 marks)*

(c) What is the special name used for the method of collecting gasses, shown in the diagram? *(02 marks)*

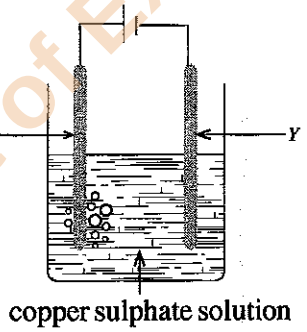
(d) Suggest **two** measures that can be taken to increase the rate of evolving gas in the above set-up. *(02 marks)*

(e) Mention a test carried out in the laboratory to identify hydrogen gas and write down the observations of it. *(02 marks)*

(f) Mention **two** uses of hydrogen gas. *(02 marks)*

(g) You are provided with two identical balloons filled with equal volumes of hydrogen gas and air separately. Explain how to identify the balloon with hydrogen gas. *(02 marks)*

(ii) Given below is a diagram of a set-up used to electrolyse a solution of copper sulphate.



(a) Which carbon rod, out of X and Y, acts as the anode of this set-up? *(01 mark)*

(b) (I) What happens to the blue colour of copper sulphate solution, when the process of electrolysis is going on? *(02 marks)*

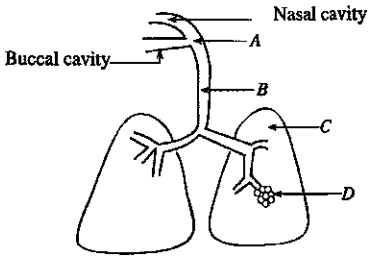
(II) Name the substance deposited on the cathode. *(01 mark)*

(c) (I) What is the term used for the process of applying a metal layer on an object by electrolysis? *(02 marks)*

(II) Name a metal which is commonly used to apply on objects by the process you mentioned above. *(01 mark)*

[*See page eleven.*

6. Given below is a schematic diagram that shows the structure of human respiratory system.



(i) (a) (I) Write the structures labelled as *A*, *B*, *C* and *D* in the diagram. *(04 marks)*

(II) What is the structure located in *A*, which is common for both digestive system and respiratory system? *(01 mark)*

(b) (I) When air is inhaled through nasal cavity, waste particles are filtered. Mention **two** other changes that happen to inhaled air, when passing through the nasal cavity. *(02 marks)*

(II) Write **two** adaptations in nasal cavity that promote the filtering of waste particles in inhaled air. *(02 marks)*

(ii) (a) (I) Name the muscles that help to increase and decrease the volume of lungs in the process of inhalation and exhalation. *(02 marks)*

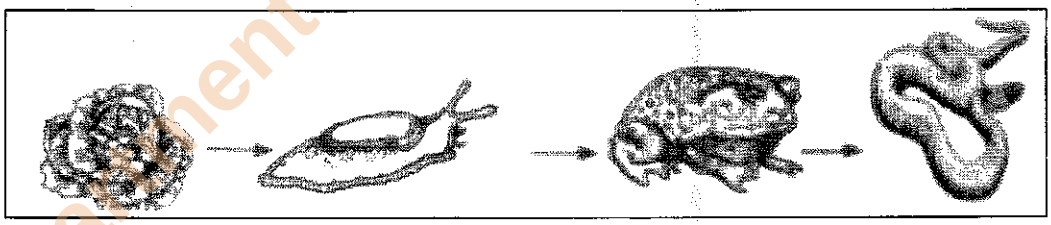
(II) Gas exchange between inhaled air and blood occurs in D. Clarify how this process occurs. *(01 mark)*

(b) (I) Write **two** diseases associated with the respiratory system caused by bacteria. *(02 marks)*

(II) Name **two** health practices that should be followed to avoid the spread of Covid-19. *(02 marks)*

(c) "Smoking causes various diseases associated with respiratory system." Give reasons in support of this statement. *(02 marks)*

7. Given below is a food chain exists in a farm land.



(i) (a) (I) How many trophic levels are there in the above food chain? *(02 mark)*

(II) Name the secondary consumer of the above food chain. *(02 mark)*

(b) The first trophic level of a food chain is essentially a green plant. Explain reason for this. *(02 marks)*

(c) Write **two** conditions that will occur if toads are eliminated from the environment where the above food chain exists. *(02 marks)*

(d) Mention as a percentage the energy lost at each trophic level of a food chain. *(02 marks)*

(e) There exist food webs but not food chains in the natural environment. Explain the reason for this. *(02 marks*

(f) Write a food chain of three links that can be observed in a pond ecosystem. *(03 marks)*

(ii) Energy flow in an ecosystem is unidirectional through food chains. But flow of materials is cyclic. An example for such a cycle is the water cycle.

(a) Show the stages of water cycle in a flow diagram. *(03 mark)*

(b) Name **two** material cycles other than the water cycle. *(02 marks)*

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