

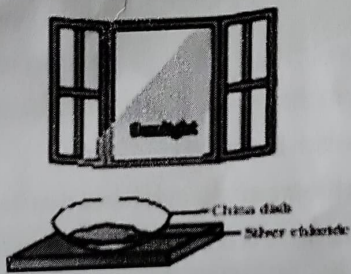
GENERAL INSTRUCTIONS:

- i. This question paper consists of 39 questions in 5 sections.
- ii. All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
- iii. Section A consists of 20 objective type questions carrying 01 mark each.
- iv. Section B consists of 6 Very Short questions carrying 02 marks each. Answers to these questions should be in the range of 30 to 50 words.
- v. Section C consists of 7 Short Answer type questions carrying 03 marks each. Answers to these questions should be in the range of 50 to 80 words.
- vi. Section D consists of 3 Long Answer type questions carrying 05 marks each. Answer to these questions should be in the range of 80 to 120 words.
- vii. Section E consists of 3 source-based/case-based questions of 04 marks each with sub-parts.

SECTION-A

Select and write the most appropriate option out of the four options given for each of the questions 1 - 20.

1. Exposure of silver chloride to sunlight for a long duration turns grey due to



- (i) The formation of silver by decomposition of silver chloride
- (ii) Sublimation of silver chloride
- (iii) Decomposition of chlorine gas from silver chloride
- (iv) Oxidation of silver chloride

- (a) (i) only
(b) (i) and (iii)
(c) (ii) and (iii)
(d) (iv) only

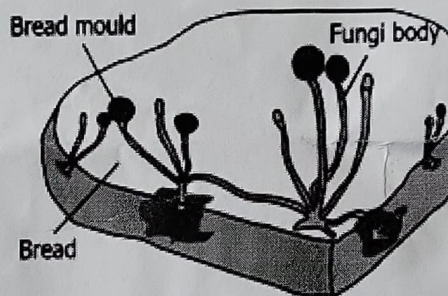
2. A substance 'X' is used in white-washing and is obtained by heating limestone in the absence of air. Identify 'X'.

- (a) CaOCl_2
(b) Ca(OH)_2
(c) CaO
(d) CaCO_3

1

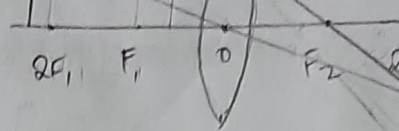
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3. Which of the following is a property of an ionic compound?
(a) soluble in water (b) low melting point
(c) poor conductivity of electricity (d) Weak force of attraction between ions 1
4. The mass ratio of the gas liberated at cathode and anode during electrolytic decomposition of water is
(a) 1:2 (b) 2:1
(c) 2:3 (d) 3:2 1
5. Which of the following statements about the autotrophs is INCORRECT?
(a) They synthesize carbohydrates from carbon dioxide and water in the presence of sunlight and chlorophyll.
(b) They store carbohydrates in the form of starch.
(c) They convert carbon dioxide and water into carbohydrates in the absence of sunlight.
(d) They constitute the first trophic level in food chains. 1
6. How do these fungi obtain nutrition?



- (a) By eating the bread on which it is growing
(b) By using nutrients from the bread to prepare their own food
(c) By breaking down the nutrients of bread and then absorbing them
(d) By allowing other organisms to grow on the bread and then consuming them 1
7. Which one of the endocrine glands is known as master gland?
(a) Pituitary (b) Adrenal
(c) Thyroid (d) Parathyroid 1
8. The substance that triggers the fall of mature leaves and fruits from plants is :
(a) Auxin (b) Gibberellins
(c) Abscisic acid (d) Cytokinin 1
9. At what distance from convex lens should an object be placed to get an image of the same size as that of the object on a screen?

- 5-
- a) Beyond twice the focal length of the lens.
 b) At principal focus of the lens
 c) At twice the focal length of the lens
 d) Between the optical centre of the lens and its principal focus.



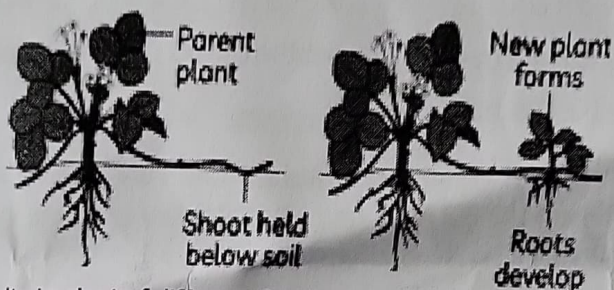
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10 When light enters the atmosphere it strikes on extremely fine particles, which deflect the rays of light in all possible directions, This is due to -

- a) reflection of light
 b) atmospheric refraction
 c) scattering of light
 d) dispersion of light

1

11 The image shows the process of vegetative propagation in a plant. The shoot of the parent plant is pushed below the soil that results in growth of a new plant. Identify the characteristics of this method.



- (a) This results in plant of different flowers.
 (b) This helps grow plants without adding extra manure.
 (c) This eliminates the need of producing plant using seeds.
 (d) This allows growth of plants with new genetic composition.

1

12 A sportsman, after a long break of his routine exercise, suffered muscular cramps during a heavy exercise session. This happened due to:

- (a) Lack of carbon dioxide and formation of pyruvate.
 (b) Presence of oxygen and formation of ethanol.
 (c) Lack of oxygen and formation of lactic acid.
 (d) Lack of oxygen and formation of carbon dioxide.

1

13 Which of the following can be used as an olfactory indicator?

- (a) Litmus
 (b) onion
 (c) Turmeric
 (d) Phenolphthalein

1

14 Magnesium ribbon is rubbed before burning because it has a coating of

- (a) basic magnesium carbonate
 (b) basic magnesium oxide
 (c) basic magnesium sulphide
 (d) basic magnesium chloride

1

23 Explain the process of nutrition in amoeba with the help of a diagram.

OR

Differentiate between Photosynthesis and Respiration. 2

24 Identify the substances that are oxidized and the substances that are reduced in the following reaction. Also identify the oxidizing and the reducing agent. 2



25 Give reason:

- i) Distilled water do not conduct electricity
- ii) Acid is added to water for dilution

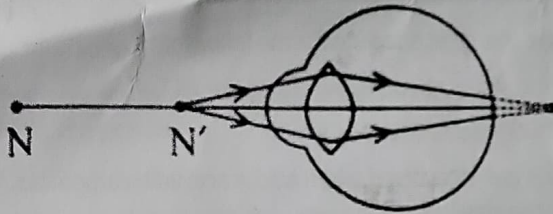
26 Define Neuron. Draw and identify the parts of a neuron at which:

- a) Information is received
- b) Impulses are converted to chemical signal for further transmission.

SECTION-C

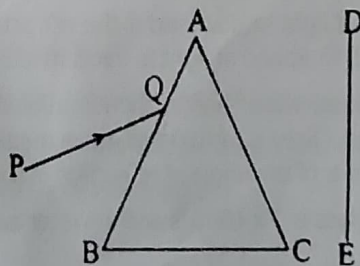
Question No. 27 to 33 are short answer questions

27. Study the diagram given below and answer the questions that follow:



- (i) Name the defect of vision represented in the diagram. Give reason for your answer.
- (ii) List two causes of this defect.
- (iii) With the help of a diagram show how this defect of vision is corrected. 1+1+1

28 A narrow beam, PQ of white light is passing through a glass prism ABC as shown in the diagram.



Draw a ray diagram to show the emergent beam as it falls on the screen DE. Also write the phenomenon involved and its cause. Using the second law of refraction state which colour of light must have the highest value of refractive index amongst seven visible colours of light. Justify your answer. (3)

29 (a) Draw a diagram to show open stomatal pore and label on it:

a. guard cells

b. chloroplast

(b) State two functions of stomata.

2+1

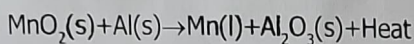
30 (a) Draw a schematic representation of transport and exchange of oxygen and carbon dioxide during transportation of blood in human beings and label on it:

Vena cava, Pulmonary artery to lungs, Aorta to body, Pulmonary veins from lungs.

(b) What is the advantage of separate channels in mammals and birds for oxygenated and deoxygenated blood?

2+1

31 (a) The given reaction shows one of the processes to extract the metals like Iron and Manganese.



Identify the type of above reaction.

b) Reddish brown fumes are evolved, when white colour salt is heated.

i) Write the chemical equation for the above reaction

ii) Name the white colour salt and why reddish brown fumes are evolved? 1+1+1

32 (a) Write the chemical equation for the following;

i) Zinc when reacts with an acid like HCl

ii) H_2SO_4 reacts with NaOH

b) Name the gas 'X' evolved when acid reacts with carbonates. What is the confirmatory test for the gas 'X'? (2+1)

33 An image of an object is produced on a screen which is about 36 cm using a convex lens. The image produced is about 3 times the size of the object. What is the size of the object

3

SECTION-D

Question No. 34 to 36 are long answer questions.

34 (a) Determine the speed of light in diamond if the refractive index of diamond with respect to vacuum is 2.42. Speed of light in vacuum is 3×10^8 m/s.

b) Refractive index of glass, water and carbon disulphide are 1.5, 1.33 and 1.62 respectively. If the ray of light is incident in these media at the same angle, then write the increasing order of the angle of refraction in these media.

c) The speed of light in glass is 2×10^8 m/s and in water is 2.25×10^8 m/s.

i) Which one of the two is optically denser and why?

ii) A ray of light is incident normally at water-glass interface when it enters a thick glass container filled with water. What will happen to the path of the ray after entering the glass? Give reason

OR

c) The refractive index of water and glass are $\frac{4}{3}$ and $\frac{3}{2}$ respectively. If the speed of light in glass is 2×10^8 m/s, find the speed of light in vacuum and water. (2+1+2)

35 a) Ram and Shyam visit a park, where they find many mimosa plants. Ram touches them with his feet and the leaflets close up, after some time they open up and again close, when Shyam touches them. Why do the leaflets close when touched? How do all the leaflets sense stimuli though all are not touched?

b) Give a reason to explain

(i) Adrenaline helps in dealing emergency situations

(ii) Secretions of growth hormones should be specific to human body requirement.

3+2

OR

a) A doctor has advised Sameer to reduce sugar intake in his diet and do regular exercise after checking his blood test reports. Which disease do you think Sameer is suffering from? Name the hormone responsible for this disease and the organ producing the hormone.

b) Which hormone is present in the areas of rapid cell division in a plant and which hormone inhibits the growth?

3+2

36 An edible white colour salt X is used in the preparation of 'Pakorras'.

(a) Name the salt X.

1

(b) Apart from kitchen, What are the other uses of this salt?

1

(c) How is the salt X prepared?

1

(d) What is the common name of this salt? Why is it basic in nature?

1

(e) How is it different from baking powder?

1

OR

(a) What is brine solution?

1

(b) Name the products obtained during electrolysis of brine solution.

1

(c) What is the name given to this process and why?

1

(d) Explain the process diagrammatically

2

SECTION-E

Question No. 37 to 39 are case-based / data-based questions with 2 to 3 short sub-parts.

Internal choice is provided in one of these sub-parts.

Read the following and answer the questions:

37 The Earth's atmosphere is a heterogeneous mixture of minute particles. These particles include smoke, tiny water droplets, suspended particles of dust and molecules of air.

When a beam of light ^{falls on} such fine particles, the path of the beams becomes visible. The light reaches us after being reflected diffusely by these particles. The phenomenon of scattering of light by the colloidal particle is known as Tyndall effect. Tyndall effect can also be observed when sunlight passes through a canopy of dense forest. The colour of the scattered particle's light depend upon size of scattering particles.

i) The phenomenon of scattering of light by colloidal particles is called

- a) Corona effect.
- b) Tyndall effect
- c) Dispersion effect
- d) None of these

ii) The colour of scattering light depends on upon

- a) volume of particles
- b) nature of particles
- c) size of particles
- d) none of these

iii) Why are danger signals red in colour?

iv) State the reason for the blue colour of the sky

4

38 a) An element 'M' with electronic configuration 2, 8, 1 combines with Cl^- anions. Write the chemical formulae of the compounds formed. Predict with the suitable reason the nature of the bond formed by element M with Cl^- . Show the electron dot structure of the compound formed.

b) With the help of equations, explain how will you extract Zinc from zinc Blende (ZnS)

OR

b) A reddish-brown metal 'X', is refined by the process of electrolysis; this refined form of X is used in electrical wiring. Draw a well-labeled diagram to represent the process of refining X.

4

39 The modes by which various organisms reproduce depend on the body design of the organisms. In asexual reproduction, a single individual parent produces offsprings without the involvement of gametes. This method is a common means of increasing the off springs rapidly under favourable conditions. A sexual reproduction occurs mostly in unicellular organisms, some plants and certain simple multicellular animals.

(a) Name the organism in which Binary fission and Multiple fission takes place.

(b) List any two advantages of producing plants through vegetative propagation.

(c) Explain the process of budding in Hydra.

4