

Sample Question Paper

SECTION- A

AI 1. Name the method by which *Hydra* reproduces. Is this method sexual or asexual ? 1

OR

Name the respiratory pigment in human beings. Where is this pigment found ?

2. Should the resistance of a voltmeter be low or high ? Give reason. 1

3. Read the passage and answer the following questions.

In the ocean, fossils are settled at the bottom in the soil/sand layer by layer. In the course of time, these layers changed into rocks due to the presence of the water above and also due to chemical reactions. The distribution of fossils indicates that early fossils present in the bottom layer are simple; however, the recent fossils found in the upper layers are more complex.

(a) Define the term fossil.

(b) If the fossil of an organism is found in the deeper layers of earth, then we can predict that

(i) The extinction of organism has occurred recently.

(ii) The extinction of organism has occurred thousands of years ago.

(iii) The fossil position in the layers of earth is not related to its time of extinction.

(iv) Time of extinction cannot be determined.

(c) _____ is a fossil bird.

(d) State any one role of fossils in the study of organic evolution? 4

4. Study the given table and answer the following questions. The table shows the pH value of the plaque surrounding the teeth of a child over 3 hrs.

Time/h	pH
0.0	7.0
1.0	7.0
2.0	7.1
3.0	7.2
4.0	4.1

(a) The constituents of plaque are

(i) Acid

(ii) Saliva

(iii) Bacteria.

(iv) All of these

(b) What causes tooth decay?

(c) State the time during the day when condition is most favourable for process of tooth decay.

(i) 1.0 (ii) 2.0 (iii) 3.0 (iv) 4.0

(d) The nature of toothpastes commonly used to protect tooth decay is _____. 4

5. Common salt besides being used in kitchen can also be used as the raw material for making : 1

(i) washing soda

(ii) bleaching powder

(iii) baking soda

(iv) slaked lime

(a) (i) and (ii)

(b) (i), (ii) and (iv)

(c) (i) and (iii)

(d) (i), (iii) and (iv)

OR

- While studying the saponification reaction, what do you observe when you mix an equal amount of colourless vegetable oil and 20% aqueous solution of NaOH in a beaker? 1
- (a) The colour of the mixture has become dark brown.
 (b) A brisk effervescence is taking place in the beaker.
 (c) The outer surface of the beaker has become hot.
 (d) The outer surface of the beaker has become cold.
6. Which of the following gives the correct increasing order of the atomic radii of O, F and N? 1
- (a) O, F, N (b) N, F, O
 (c) O, N, F (d) F, O, N
7. The correct sequence of reproductive stages seen in flowering plants is : 1
- (a) gametes, zygote, embryo, seedling (b) zygote, gametes, embryo, seedling
 (c) seedling, embryo, zygote, gametes (d) gametes, embryo, zygote, seedling
8. In which of the following, the image of an object placed at infinity will be highly diminished and point sized? 1
- (a) Concave mirror only
 (b) Convex mirror only
 (c) Convex lens only
 (d) Concave mirror, convex mirror, concave lens and convex lens
9. An optical device has been given to a student and he determines its focal length by focusing the image of the Sun on a screen placed 24 cm from the device on the same side as the Sun. Select the correct statement about the device. 1
- (a) Convex mirror of focal length 12 cm (b) Convex lens of focal length 24 cm
 (c) Concave mirror of focal length 24 cm (d) Convex lens of focal length 12 cm
10. The danger signals installed at the top of tall buildings are red in colour. These can be easily seen from a distance because among all other colours, the red light : 1
- (a) is scattered the most by smoke or fog (b) is scattered the least by smoke or fog
 (c) is absorbed the most by smoke or fog (d) moves fastest in air
11. A rectangular coil of copper wire is rotated in a magnetic field. The direction of the induced current changes once in each : 1
- (a) two revolutions. (b) one revolution.
 (c) half revolution. (d) one-fourth revolution.
12. Disposable plastic plates should not be used because 1
- (a) They are made of materials with light weight.
 (b) They are made of toxic materials.
 (c) They are made of biodegradable materials.
 (d) They are made of non - biodegradable materials.

For question numbers 13 and 14, two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (i), (ii), (iii) and (iv) as given below :

- (i) Both A and R are true and R is correct explanation of the assertion.
 (ii) Both A and R are true but R is not the correct explanation of the assertion.
 (iii) A is true but R is false.
 (iv) A is false but R is true.

13. **Assertion (A) :** Unisexual flowers have separate male and female flowers. 1
Reason (R) : Cucumber, pumpkin and watermelon are example of unisexual flowers.

OR

Assertion (A) : Units which make up the nervous system are called neurons.

Reason (R) : Nerve impulses are carried by dendrites towards the cell body.

14. **Assertion (A) :** Refractive index of glass with respect to air is different for red light and violet light. 1
Reason (R) : Refractive index of a pair of media depends on the wavelength of light used.

SECTION- B

- AI** 15. Based on the group valency of elements, write the molecular formula of the following compounds giving justification for each :
- (i) Oxides of first group elements.
 - (ii) Halides of the elements of group 13, and
 - (iii) Compounds formed when an element A of group 2 combines with an element B of group 17. 3
16. Identify the acid and base which form sodium hydrogen carbonate. Write chemical equation in support of your answer. State whether this compound is acidic, basic or neutral. Also, write its pH value. 3

OR

What are amphoteric oxides ? Give an example.

Write balanced chemical equations to justify your answer.

- AI** 17. Write the structural formula of ethanol. What happens when it is heated with excess of conc. H_2SO_4 at 443 K ? Write the chemical equation for the reaction stating the role of conc. H_2SO_4 in this reaction. 3
18. Trace the sequence of events which occur when a bright light is focused on your eyes. 3

OR

List in tabular form three distinguishing features between autotrophic nutrition and heterotrophic nutrition.

- AI** 19. What are plant hormones ? Name the plant hormones responsible for the following : 3
- (i) Growth of stem
 - (ii) Promotion of cell division
 - (iii) Inhibition of growth
 - (iv) Elongation of cells

- AI** 20. What happens to a beam of white light when it gets refracted through a glass prism ? Which colour deviates the most and the least after refraction through a prism ? What is likely to happen if a second identical prism is placed in an inverted position with respect to the first prism ? Justify your answer. 3

OR

A student needs spectacles of power – 0.5 D for the correction of his vision.

- (i) Name the defect in vision the student is suffering from.
- (ii) Find the nature and focal length of the corrective lens.
- (iii) List two causes of this defect.

21. Derive an expression for electric energy consumed in a device in terms of V , I and t , where V is the potential difference applied to it, I is the current drawn by it and t is the time for which the current flows ? 3
22. It is necessary to connect an earth wire to electric appliances having metallic covers. Why ? How will you identify earth wire in household circuit ? 3
- AI** 23. List three advantages each of : 3
- (i) exploiting resources with short term aims, and
 - (ii) using a long term perspective in managing our natural resources.
24. What are solar cells ? Explain the structure of solar panel. List two principal advantages associated with solar cells. 3

SECTION- C

AI 25. Why are certain compounds called hydrocarbons ? Write the general formula for homologous series of alkanes, alkenes and alkynes and also draw the structure of the first member of each series. Write the name of the reaction that converts alkenes into alkanes and also write a chemical equation to show the necessary conditions for the reaction to occur. 5

OR

(a) Explain why carbon forms covalent bond ? Give two reasons for carbon forming a large number of compounds.

(b) Explain the formation of ammonia molecule.

26. Define a chemical reaction. State four observations which help us to determine that a chemical reaction has taken place. Write one example of each observation with a balanced chemical equation. 5

AI 27. What is sexual reproduction ? Explain how this mode of reproduction gives rise to more viable variations than asexual reproduction. How does this affect the evolution ? 5

OR

(a) What are dominant and recessive traits ?

(b) "Is it possible that a trait is inherited but may not be expressed in the next generation ?" Give a suitable example to justify this statement.

AI 28. (a) Draw a diagram of human excretory system and label the following parts on it : 5

(i) Right Renal Artery

(ii) Vena cava.

(iii) Urinary bladder

(iv) Left kidney

(b) List two vital functions of kidney.

AI 29. An object is placed at a distance of 60 cm from a concave lens of focal length 30 cm. 5

(i) Use lens formula to find the distance of the image from the lens.

(ii) List four characteristics of the image (nature, position, size, erect/inverted) formed by the lens in this case.

(iii) Draw ray diagram to justify your answer of part (ii).

OR

(i) 4.5 cm needle is placed 12 cm away from a convex mirror of focal length 15 cm. Give the location of the image and the magnification.

Describe what happens as the needle is moved further from the mirror.

(ii) What kind of mirror is used in a solar furnace ? Give reason for using this mirror

(iii) One half of a convex lens is covered with a black paper. Will this lens produce a complete image of the object ? Justify your answer.

AI 30. What is a solenoid ? Draw the pattern of magnetic field lines of (i) a current carrying solenoid and (ii) a bar magnet. List two distinguishing features between the two fields. 5

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