2023

SCIENCE

Total marks : 80 Time : 3 hours

General instructions:

i) *Approximately 15 minutes is allotted to read the question paper and revise the answers. The question paper consists of 35 questions in 5 categories.*

ii) *All questions are compulsory in 1 and 2 marks questions. General choice has been given in 3 and 5 marks questions.*

iii) *Internal choice has been provided in some questions. A student has to attempt only one of the alternatives in such questions.*

iv) *Marks allocated to every question are indicated against it.*

v) *Alternate questions for the visually impaired students are provided in some questions.* ***Only the visually impaired students have to attempt such alternate questions.***

N.B: Check to ensure that all pages of the question paper are complete as indicated on the top left side.

1. **Choose the correct answer from the given alternatives:**

(a) Which is the reducing agent in the following reaction? **1**

$CuO\ (s) + H_2\ (g) \rightarrow Cu\ (s) + H_2O\ (l)$

(i) CuO (s) (ii) H_2 (g)

(iii) Cu (s) (iv) H_2O (l)

(b) Oranges and lemons are good sources of **1**

(i) nitric acid (ii) tartaric acid

(iii) citric acid (iv) acetic acid

(c) Which of the following non-metal is lustrous? **1**

(i) Chlorine (ii) Flourine

(iii) Bromine (iv) Iodine

(d) Alkenes are represented by the general formula **1**

(i) C_nH_{2n+2} (ii) C_nH_{2n}

(iii) C_nH_{2n-2} (iv) $C_nH_{2n+1}OH$

(e) The gap between two neurons is called **1**

(i) dendrite (ii) synapse

(iii) axon (iv) impulse

(f) In Rhizopus, tubular thread like structures bearing sporangia at their tips are called **1**

(i) filaments (ii) hyphae

(iii) rhizoids (iv) roots

(g) The centre of the reflecting surface of a spherical mirror is called its **1**

(i) focus (ii) curvature
(iii) aperture (iv) pole

(h) A human eye can focus objects at different distances by adjusting the focal length of the eye lens. This is due to **1**

(i) near sightedness (ii) far sightedness
(iii) accomodation (iv) persistance of vision

(i) Which of the following is **NOT** a fossil fuel? **1**

(i) Coal (ii) Petroleum
(iii) Biogas (iv) Wood

(j) The flow of energy in a food chain is **1**

(i) unidirectional (ii) bidirectional
(iii) multidirectional (iv) both (i) and (ii)

Answer the following questions in one word or one sentence:

2. Define pH scale. **1**

3. What are alloys? Give one example. **1**

4. Write any two uses of ester. **1**

5. Which receptor in animals is responsible for detecting taste? **1**

6. Define 1 dioptre of power of a lens. **1**

Answer the following questions in about 20-30 words:

7. Mention two properties of carbon which lead to the large number of carbon compounds. **2**

8. Write one function each of xylem and phloem. **2**

9. What are dominant and recessive traits? **2**

10. A student has difficulty reading the board while sitting in the last row in a classroom. What could be the defect the child is suffering from? How can it be corrected? **1+1=2**

11. Define electric potential difference. State its S.I unit. **1+1=2**

Answer <u>any 10 questions</u> from the following questions <u>(12 to 26)</u> in about 40-60 words:

12. Balance the following chemical equations:

(i) $FeSO_4 \rightarrow Fe_2O_3 + SO_2 + SO_3$

(ii) $Na_2SO_4 + BaCl_2 \rightarrow BaSO_4 + NaCl$

(iii) $MnO_2 + HCl \rightarrow MnCl_2 + H_2O + Cl_2$ **3×1=3**

Alternate question for the visually impaired students:
What are exothermic and endothermic reactions? Give one example each.
(1½+1½=3)

13. What are acid-base indicators? Give two examples each for synthetic and olfactory indicators. **1+2= 3**

14. (i) What is the chemical name of baking soda?
(ii) Write the chemical equation for its preparation.
(iii) Write one use of baking soda. **3×1=3**

15. **a.** Write three differences between soaps and detergents. **3×1=3**

Or

b. What is a homologous series? Write two characteristics of homologous series.
(1+2=3)

16. How does the human body respond when adrenaline is secreted into the blood? **3**

17. Explain sex determination in human beings. **3**

18. **a.** A concave lens has a focal length of 15 cm. At what distance should the object be placed from the lens, so that it forms an image at 10 cm from the lens? Also find the magnification produced by the lens.

Or **3**

b. An object 5 cm in length is held 25 cm away from a converging lens of focal length 10cm. Find the position, size and nature of the image formed.

Alternate question for the visually impaired students:
State the laws of refraction of light. (1½+1½=3)

19. Write any three uses of concave mirrors. **3**

20. **a.** Several electric bulbs designed to be used on a 220V electric supply line are rated 10W. How many bulbs can be connected in parallel with each other across the two wires of 220V line if the maximum allowable current is 5A?

Or **3**

b. How many 176Ω resistors (in parallel) are required to carry 5A on a 220V line?

Alternate question for the visually impaired students:
(i) Why are alloys commonly used in electrical heating devices?
(ii) Why is the series arrangement not used for domestic circuits? (1½+1½=3)

21. Explain on what factors does the resistance of a conductor depend? **3×1=3**

22. What is a magnetic field? Write two properties of a magnetic field. **1+2=3**

23. Mention any three qualities of a good source of energy. **3×1=3**

24. Write any three advantages of using biogas as fuel. **3×1=3**

25. List any three roles of decomposers in an ecosystem. **3×1=3**

26. What is a food chain? Why are food chains limited to only three or four steps? Give one example of a food chain. **1+1+1=3**

Answer <u>any 5 questions</u> from the following questions <u>(27 to 35)</u> in about 70-100 words:

27. Differentiate giving five points between metals and non-metals on the basis of their chemical properties. **5**

28. What are ionic compounds? Explain any four properties of ionic compounds. **1+4=5**

29. Explain the process of blood circulation in the human heart with a labelled diagram. **3+2=5**

Alternate question for the visually impaired students:

(i) Define excretion.
(ii) Name the components of the excretory system in human beings.
(iii) Name the nitrogenous waste present in the urine of human beings.
(iv) What is the basic filtration unit in the kidneys? (1+2+1+1=5)

30. Explain the process of digestion, absorption and assimilation of the human alimentary canal with a labelled diagram. **3+2=5**

Alternate question for the visually impaired students:

Describe double circulation of blood in human beings. Why is it necessary? (4+1=5)

31. **a**. Explain any two methods of asexual reproduction with diagrams.

Or **3+2=5**

b. Explain the process of germination of pollen on stigma with a labelled diagram.

Alternate question for the visually impaired students:

Mention any two sexually transmitted diseases. Write three preventive measures for sexually transmitted diseases. (2+3=5)

32. **a**. Explain the functioning of the human eye with a labelled diagram. **3+2=5**

Or

b. What is dispersion of light? Explain the dispersion of light by a glass prism with a diagram. (1+2+2=5)

Alternate question for the visually impaired students:

(i) What is presbyopia?
(ii) What is the cause of presbyopia?
(iii) What kind of lens will be required to see clearly the nearby as well as distant objects? Give reasons. (1+1+3=5)

33. Explain the following phenomena:
(i) Twinkling of stars
(ii) Blue colour of clear sky. **2½+2½=5**

34. **a**. Explain the underlying principle and working of an electric generator with a labelled diagram.

Or **3+2=5**

b. State the factors on which magnetic field produced by a current carrying solenoid depend. With the help of a diagram, show field lines of the magnetic field through and around a current carrying solenoid.

Alternate question for the visually impaired students:

(i) What is electromagnetic induction?
(ii) State Fleming's Right Hand Rule.
(iii) Write two points of difference between Alternating current (AC) and Direct current (DC). (1+2+2=5)

35. What is ozone? How is ozone formed in the upper atmosphere? Give two reasons why the damage of ozone layer is a cause of concern for all. **1+2+2=5**

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