RS 3

Time : 3.00 Hrs **SCIENCE** Marks : 75

PART – I

Note: (i) Answer All the questions. 12 X 1 = 12

(ii) Choose the most appropriate answer from the given four alternatives and write option code and the corresponding answer.

1. Which of the following lens would you prefer to use while reading small letters found in a dictionary?
   a) A convex lens of focal length 5 cm b) A concave lens of focal length 5 cm
   c) A convex lens of focal length 10 cm d) A concave lens of focal length 10 cm
2. In a simple circuit, why does the bulb glow when you close the switch?
   a) The switch produces electricity. b) Closing the switch completes the circuit.
   c) Closing the switch breaks the circuit. d) The bulb is getting charged.
3. Velocity of sound in the atmosphere of a planet is 500 ms^{-1}. The minimum distance between the sources of sound and the obstacle to hear the echo, should be
   a) 17 m b) 20 m c) 25 m d) 50 m
4. Which of the following has the smallest mass? a) 6.023×10^{23} atoms of He
   b) 1 atom of He c) 2 g of He d) 1 mole atoms of He
5. _____ group contains the member of halogen family.
   a) 17^{th} b) 15^{th} c) 18^{th} d) 16^{th}
6. Which of the following is not an "element + element 'I compound" type reaction?
   a) $C_{(s)} + O_{2(g)} \rightarrow CO_{2(g)}$ b) $2K_{(s)} + Br_{2(l)} \rightarrow 2KBr_{(s)}$
   c) $2CO_{(g)} + O_{2(g)} \rightarrow 2CO_{2(g)}$ d) $4Fe_{(s)} + 3O_{2(g)} \rightarrow 2Fe_2O_3(s)$
7. The brain of leech lies above the
   a) Mouth b) Buccal Cavity c) Pharynx d) Crop
8. Which one of the following is an IUCD?
   a) Copper – T b) Oral pills c) Diaphragm d) Tubectomy
9. The centromere is found at the centre of the _____ chromosome.
   a) Telocentric b) Metacentric c) Sub-metacentric d) Acrocentric
10. Pusa Komal is a disease resistant variety of _____.
    a) Sugarcane b) Rice c) Cow pea d) Maize
11. Tobacco consumption is known to stimulate secretion of adrenaline. The component causing this could be
    a) Nicotine b) Tannic acid c) Curcumin d) Leptin
12. The gas released from vehicles exhaust are
    i. Carbon monoxide ii. Sulphur dioxide iii. Oxides of nitrogen
    a) i and ii b) i and iii c) ii and iii d) i, ii and iii

PART – II

Note: Answer any seven questions. Question No.22 is compulsory. 7 X 2 = 14

13. While catching a cricket ball the fielder lowers his hands backwards. Why?
14. What are the causes of 'Myopia'?
15. What is rust? Give the equation for formation of rust.
16. Classify the following substances into deliquescent, hygroscopic. Con.Sulphuric acid, Copper sulphate pentahydrate, Silica gel, Calcium chloride and Epsum salt.
17. Identify the parts A,B,C,D. in the given figure.

18. Why is the Sinoatrial node called the pacemaker of heart?
19. What is the role of parathormone?
20. Distinguish between somatic gene therapy and germ line gene therapy
21. What is Sprite ?
22. $_{92}U^{235}$ experiences one α - decay and one β - decay. Find number of neutrons in the final daughter nucleus that is formed.

PART – III

Note: Answer any seven questions. Question No.32 is compulsory. 7 X 4 = 28

23. (i) Classify the types of force based on their application.
(ii) How does an astronaut float in a space shuttle?
24. (i) What is refractive index?
(ii) Why does the sky appear in blue colour?
25. (i) State Joule's law of heating.
(ii) An alloy of nickel and chromium is used as the heating element. Why?
26. (i) **Match the following**

1. Blue vitriol	–	$CaSO_4 .2H_2O$
2. Gypsum	–	CaO
3. Deliquescence	–	$CuSO_4 .5H_2O$
4. Hygroscopic	–	NaOH

(ii) **Fill in the blanks**
1. The normal pH of human blood is _____ .
2. Chemical volcano is an example for _____ type of reaction

27. Give the balanced chemical equation of the following reactions:
(i) Neutralization of NaOH with ethanoic acid.
(ii) Combustion of ethanol.
28. Define Ethnobotany and write its importance.
29. Discuss the importance of biotechnology in the field of medicine.
30. Differentiate between Type-1 and Type-2 diabetes mellitus
31. What are the consequences of soil erosion?
32. Calculate the % of oxygen in $Al_2(SO_4)_3$. (Atomic mass: Al-27, O-16, S -32)

PART - IV

Note: Answer all the questions. Draw diagrams wherever necessary.

33. (a) (i) State and prove the law of conservation of linear momentum. 3 X 7 = 21
(ii) State Boyle's law. **(OR)**
(b) (i) What do you understand by the term 'ultrasonic vibration'?
(ii) State three uses of ultrasonic vibrations.
(iii) Name three animals which can hear ultrasonic vibrations.
34. (a) (i) What are the methods used to prevent corrosion?
(ii) Define Hydrated salt. **(OR)**
(b) (i) The electronic configuration of metal A is 2, 8, 18, 1. The metal A when exposed to air and moisture forms B a green layered compound. A with con. H_2SO_4 forms C and D along with water. D is a gaseous compound. Find A,B,C and D. (ii) Why does the reaction rate of a reaction increase on raising the temperature?
35. (a) (i) Write a short note on mesophyll.
(ii) How are arteries and veins structurally different from one another?
(iii) What does CNS stand for? **(OR)**
(b). (i) Write the events involved in the sexual reproduction of a flowering plant.
a. Discuss the first event and write the types.
b. Mention the advantages and the disadvantages of that event.
(ii) Which acts as a link between the nervous system and endocrine system?