SCIENCE

Note: This question paper contains four parts

Note: i) Answer all the questions   12 × 1 = 12
        ii) Choose the most suitable answer and write the code with corresponding answer

1. The refractive index of four substances A, B, C and D are 1.31, 1.43, 1.33, 2.4 respectively. The speed of light s maximum in
a) A   b) B   c) C   d) D

2. The frequency, which is audible to the human ear is
a) 50 kHz   b) 20 kHz   c) 15000 kHz   d) 10000 kHz

3. A piece of ice can
a) not radiate heat   b) radiate and absorb heat
c) radiate heat but not absorb   d) absorb heat but not radiate heat

4. Which of the following is hygroscopic in nature?
a) ferric chloride   b) copper sulphate penta hydrate
c) silica gel   d) none of the above

5. The pH of a solution is 11. It's (OH^-) concentration is
a) 1×10^{-11} b) 1×10^{-3} c) 3 M   d) 11 M

6. Pure gold is
a) 16 carat   b) 22 carat   c) 20 carat   d) 24 carat

7. The animals which give birth to young ones are
a) oviparous   b) viviparous   c) ovoviviparous   d) all the above

8. Avena coleoptile test was conducted by
a) Darwin   b) N. Smit   c) Paal   d) F.W. Went

9. Cancer of the epithelial cells is called
a) Leukemia   b) Sarcoma   c) carcinoma   d) lipoma

10. Conjoint, collateral, open and end arch vascular bundles found in

a) monocot stem   b) dicot stem   c) monocot root d) dicot root

---

11. The gap between neurons is called
a) dendrites   b) synapse   c) axon   d) Impulse

12. Multiple files are stored in a
a) script editor   b) paint   c) note pad   d) folder

<u>PART</u> - <u>II</u>   7 × 2 = 14
Note: Answer any seven questions (Q. No 22 is compulsory)

13. State Newton's third law with an example.

14. What is meant by rarer and denser medium?

15. What is rust? Give the equation for formation of rust.

16. Give an example each i) solid in liquid   ii) gas in gas

17. List out the parasitic adaptations in leech.

18. Differentiate between systemic circulation and pulmonary circulation.

19. Write any two physiological effects of cytokinins.

20. How can you determine the age of fossils?

21. Write any two steps to prevent soil erosion.

22. A container whose capacity is 70 ml is filled with a liquid up to 50 ml. Then, the liquid in the container is heated. Initially, the level of the liquid falls from 50 ml to 48.5 ml. Then we heat more, the level of the liquid rises to 51.2 ml. Find the apparent and real expansion.

<u>PART</u> - <u>III</u>
Note: Answer any seven questions (Q. No.32 is compulsory) 7 × 4 = 28

23. i) state whether the following statement is true or false. Justify your answer.
The effective resistance of three resistors connected in series is lesser than the lowest of the individual resistances.
ii) Fill in the blanks.
a) The ratio of potential difference to the current is known as _____.

b) LED stands for _____.

24. Derive the ideal gas equation.

25. i) Calculate the amount of energy released when a radioactive substance undergoes fusion and results in a mass defect of 2 kg.
ii) Define one roentgen.

26. In what way hygroscopic substances differ from deliquescent substances.

27. i) Define volume percentage
ii) Calculate the volume of ethanol in 200 ml solution of 20% v/v aqueous solution of ethanol.

28. Differentiate between dicot and monocot stem.

29. What is transpiration? Give the importance of transpiration.

30. i) what is the importance of rainwater harvesting?
ii) solar energy is a renewable energy. How?
31. What are the effects of hybrid vigour in animals.

32. Metal A belongs to period 3 nad group 13. A in red hot condition reacts with steam to form B. A with strong alkali forms C. Find A,B and C with reactions.

PART - IV
Note: i) Answer all the questions
    ii) Each question carries seven marks
    iii) Draw the diagram wherever necessary

33.A) i)Explain the construction and working of a 'compound microscope'
    ii) The eyes of the nocturnal birds like owl are having a large   cornea and a large pupil. How does it help them?
                    (or)
33. B) i) A torch bulb is rated at 3 V and 600 mA. Calculate it's

    a) power b) resistance   c) Energy consumed if it is used for 4 hours

    ii) If you keep ice at $0°C$ and water $0°C$ in either of your hands, in which you will feel more chillness? why?
    iii) State Boyle's law.

34.A) i) Fill in the blanks using IUPAC nomenclature of organic compounds.

Name of the compound	Structural formula	Functional group present
--------	$CH_3-CH-CH_3$ $\vert$ OH	-OH
Ethanal	CH_3-C-H $\Vert$ O	-----------
Butanone	---------	>C=O
-----------	$CH_3-CH_2-CH_2-COOH$	-COOH

    ii) Extraction of metal from metal oxide categorised into three types. Tabulate

(or)

34.B)i) What is a chemical equilibrium? What are it's characteristics?

   ii) Calculate the pH of 0.001 molar solution of HCI.

35.A) i) With a neat labelled diagram describe the parts of a typical angiospermic ovule

ii) Leeches do not have an elaborate secretion of digestive juices and enzymes-why?

(or)

35.B) i) Enumerate the functions of forests.

    ii) What is the role of fat in the cause of atherosclerosis?

Prepared by

S. KRISHNA RAJ

Melmaruvathur Adhiparasakthi High School

E-mail ID:kk4807951@gmail.com