10th - SCIENCE

Time Allowed: 15 mins + 2.30 hours] **Maximum Marks: 75**

Instructions : (1) Check the question paper for fairness of printing. If there is any lack of fairness, inform the Hall supervisor immediately.

PART – I

12x1=12

Choose the most suitable answer and write the code with the corresponding answer

1. A convex lens forms a real, diminished point sized image at focus. Then the position of the object is at

   a) focus b) infinity c) at 2f d) between f and 2f

2. The resistivity of copper is

   a) 1.62×10^{-8} b) 6.84×10^{-8} c) 12.9×10^{-8} d) 3.48×10^{-8}

3. _____ rays have the lowest penetrating power

   a) α b) β c) γ d) both a and b

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. A single displacement reaction is represented by $X_{(s)} + 2HCl_{(aq)} \rightarrow XCl_{2(aq)} + H_{2(g)}$. Which of the following(s) could be X.

6. Why is cleansing power of detergent greater than soap?

   a) Because it increases surface tension of water molecules.

   b) Because it increases viscosity of water molecules.

   c) Because it increases adhesive force of water molecules.

   d) Because it reduce surface tension of water molecules.

7. Blister copper contains
   a) 50% pure copper b) 99% pure copper and 1% impurities
   c) 98% pure copper 2% impurities d) 75% pure copper and 25% impurities

8. Which of the following is an IUCD?
   a) Copper – T b) oral pills c) Diaphragm d) tubectomy
9. Excessive consumption of alcohol leads to ---------
   a) Loss of memory b) cirrhosis of liver
   c) State of hallucination d) suppression of brain function
10. Plants and animals are typically sterile.
   a) Tetraploidy b) triploidy c) euploidy d) aueuploidy
11. Melatonin is a hormone produced by the
   a) Pituitary gland b)pineal gland
   c) Thyroid gland d) parathyroid gland
12. Which is used to build scripts?
   a) Script area b) Block palette c) stage d) sprite

PART – II

Note: Answer any Seven Questions (Question No. 22 Compulsory) 7x2=14

13. How does an astronaut float in a space shuttle?
14. A container whose capacity is 70 ml is filled with a liquid up to 50ml. Then, the liquid in the container is heated. Initially, the level of the liquid falls from 50ml to 48.5 ml. Then we heat more, the level of the liquid rises to 51.2ml. Find the apparent and real expansion.
15. Differentiate light and sound
16. The aquatic animals live more in cold region why?
17. a)State the reason for addition of caustic alkali to bauxite ore during purification of bauxite.

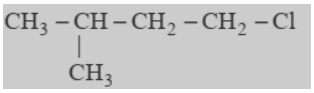
b) Along with cryolite and alumina, another substance is added to the electrolyte mixture. Name the substance and give one reason for the addition.

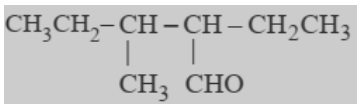
18. Why are thyroid hormones referred as personality hormone?
19. I) define stimulus ii) define reflex arc.
20. List out the parasitic adaptations in leech.
21. What is respiratory quotient?
22. Calculate the number of molecules in 11g of CO_2.

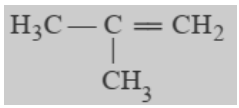
PART – III

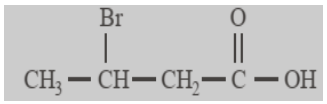
Note: Answer any Seven Questions (Question No. 32 Compulsory) 7x4=28

23. a) State the universal law of gravitation and derive its mathematical expression
    b) Differentiate mass and weight
24. a) Explain the rules for obtaining images formed by a convex lens with the help of ray diagram.
    b) State Snell's law
25. Give the salient features of "Modern atomic theory".
26. Write the IUPAC name of the following

1. 

2. 

3. 

4. 

27. Metal A belongs to period 3 and 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
28. In what way hygroscopic substances differ from deliquescent substances.
29. Differentiate the following:
    a) Monocot root and dicot root
    b) Aerobic and anaerobic respiration.
30. Enumerate the importance of forest/
31. a)What is oncology? b) What are the types of cancer?
32. a) A source and listener are both moving towards each other with a speed v/10 where v is the speed of sound. If the frequency of the note emitted by the source is f, what will be the frequency heard by the listener?
    b) Calculate the amount of energy released when a radioactive substance undergoes fusion and results in a mass defect of 4 kg.

PART – IV

Note: 1. Answer all the question 3x7=21

2. Each question carries seven marks 3. Draw diagram wherever necessary

33. a) Derive the ideal gas equation.

b) Explain the experiment of measuring the real and apparent expansion of a liquid with a neat diagram.

(OR)

a) State Joule's law of heating.

b) An alloy of nickel and chromium is used as the heating element. Why?

c) How does a fuse wire protect electrical appliances?

d) Compare the properties of alpha, beta and gamma radiations.

34. Explain the factors influencing the rate of a reaction Explain the factors influencing the rate of a reaction

(or)

Explain the mechanism of cleansing action of soap.

35. a) i)Enumerate the function of blood

ii) Define triple fusion.

iii) Name two maize hybrids rich in amino acid lysine. **(or)**

c) i) Natural selection is a driving force for evolution how?

ii) a pure tall plant (TT) is crossed with pure dwarf plant (tt), what would be the F1 and F2 generations? Explain

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