Time : 2.30 Hr   **X STD   SCIENCE**   **Marks : 75**

I.Choose the correct answer   **12x1=12**

1. One kilogram force is equals to
   a) 9.8 dyne   b) 9.8×10^4 dyne   c) 98×10^4 dyne   d) 980 dyne
2. The refractive index of four substances A, B, C and D are 1.31, 1.43, 1.33 and 2.4 respectively. The speed of the light minimum
   a) A   b) B   c) C   d) D
3. If a substance is heated or cooled, the change in mass of that substance is
   a) positive   b) negative   c) zero   d) none of the above
4. Kilowatt hour is the unit of
   a) resistivity   b) conductivity   c) electrical energy   d) electrical power
5. The volume occupied by 44 g of CO_2 at S.T.P
   a) 22.4 litre   b) 2.24 litre   c) 0.24 litre   d) 0.1 litre
6. _____ group contains the member of chalcogen family.
   a) 15th b) 16th c) 17th d) 18th
7. Which is formed during anaerobic respiration
   a) Carbohydrates   b) Ethyl alcohol   c) Acetyl CoA   d) pyruvic Acid
8. The brain of the leech lies above the
   a) Mouth   b) Buccal cavity   c) Pharynx   d) crop
9. The wall of human heart is made up of
   a) Endocardium   b) Epicardium   c) Myocardium   d) All of the above
10. Vomitting center is located in
    a) medulla oblonagata   b) stomach   c) cerebrum   d) hypothalamus
11. Avena coleoptiles test was conducted by
    a) Darwin   b) N.Smit   c) Paal   d) F.W.Went
12. Okasaki fragments are joined together by
    a) Helicase   b) DNA polymerase   c) RNA primer   d) DNA ligase

II. Answer any seven Questions (Q.No.22 is compulsory)   **7x2=14**

13. State Newton's second law.
14. What are the causes of 'Myopia'.
15. Define Rrelative atomic mass.
16. Classify the following substances into deliquescent, hygroscopic.
    (Conc.Sulphuric acid, Copper sulphate penta hydrate, Silica gel, Calcium chloride, Gypsum salt.)
17. Differentiate dicot and monocot leaf.
18. Who discovered Rh factor? Why was it named so?
19. Why are thyroid hormones referred as personality hormone?
20. Draw the structure of gynoecium and label its parts.
21. Why did Mendel select pea plant for his experiments?
22. A piece of wire of resistance 10 ohm is drawn out so that its length is increased to three times its original length. Calculate the new resistance.

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III. Answer any seven Questions (Q.No: 32 is compulsory)   **7x4=28**

23. Give any four applications of universal law gravitation.
24. a) State Rayleigh's scattering law.   (2)

    b) Why does the sky appears in blue colour?   (2)
25. a) Calculate the coefficient of cubical expansion of a zinc bar. Whose volume is increased

    $0.25m^3$ from $0.3 \ m^3$ due to the change in its temperature of 50 K.   (2)

    b) An alloy of nickel and chromium is used as the heating element. Why?   (2)
26. a) Find the percentage of nitrogen in ammonia.   (2)

    b) State Avogadro's law.   (2)
27. Write notes on: (i) Saturated solution   (2)   (ii) Unsaturated solution   (2)
28. Differentiate aerobic and anaerobic respiration.
29. List out the parasitic adaptations in leech.
30. Write any four functions of blood.
31. What are the phases of menstrual cycle? Indicate the changes in the ovary and uterus.
32. The sex of the new born child is a matter of chance and neither of the parents may be considered responsible for it. What would be the possible fusion of gametes to determine the sex of the child?

IV.   i) Answer all the questions. ii) Each question carries seven marks   3x7=21

   iii) Draw diagrams wherever necessary

33. a) Derive the ideal gas equation.   (5)

    b) State Joule's law of heating.   (2)

                           (OR)

    a) Explain the rules for obtaining images formed by a convex lens with the help of ray diagram.

    b) At what height from the centre of the Earth the acceleration due to gravity will be ¼th of its value as at the Earth?   (4+3)
34. a) Give the applications of Avogadro's law.   (3)

    b) Calculate the number of moles in (i) 27 g of Al (ii) 1.51×10^{23} molecules of NH_4Cl (4)

                           (OR)

    a) 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.   (5)

    b) Define amalgam.   (2)
35. a) Explain the male reproductive system of rabbit with a labeled diagram.   (5)

     b) Write any four importance of transpiration.   (2)

                           (OR)

    a) Name the gaseous plant hormone.   (1)

    b) Write the physiological effects of gibberellins.   (4)

    c) Which hormone is known as stress hormone in plants? Why?   (2)