COMMON HALF YEARLY EXAMINATION – 2022

Standard X Reg.No. : 1 0 0 1 4

SCIENCE

Time: 3.00 hrs. **Part - I** **Marks: 75**

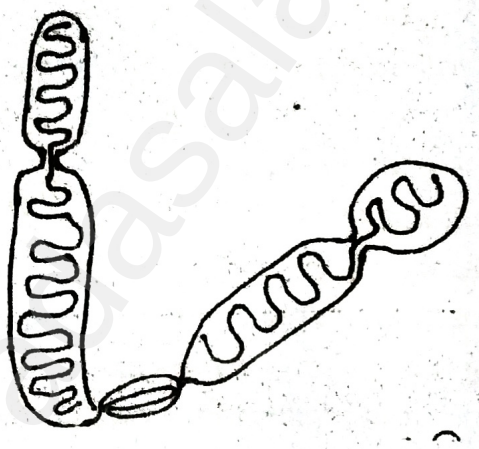
I. Choose the correct answer: **12 x 1 = 12**

1. The mass of a body is measured m planet Earth as 2 M kg. When it is taken to a planet of radius half that of the Earth then its value will be _____ kg.
   a) 4 M b) 2 M c) M/4 d) M
2. The velocity of sound in air at a particular temperature is 330 ms^{-1}. What will be its value when temperature is doubled and the pressure is halved?
   a) 330 ms^{-1} b) 165 ms^{-1} c) $330 \times \sqrt{2}$ ms^{-1} d) $320/\sqrt{2}$ ms^{-1}
3. The gram molecular mass of water molecule is
   a) 16 g b) 18 g c) 32 g d) 17 g
4. Chemical formula of Rust is _____.
   a) $FeO \times H_2O$ b) $FeO_4 \times H_2O$ c) $Fe_2O_3 \times H_2O$ d) FeO
5. The general molecular formula of alkynes is _____.
   a) C_nH_{2n} b) $C_nH_{2n\times2}$ c) C_nH_{2n-2} d) C_nH_{2n+1}
6. Kreb's cycle takes place in
   a) chloroplast b) mitochondria matrix
   c) stomata d) inner mitochondrial membrane
7. The animals which give birth of young ones are
   a) oviparous b) viviparous c) ovoviviparous d) all the above
8. Which one of the following shows correct composition of blood?
   a) plasma - blood + lymphocyte b) serum – blood + fibrinogen
   c) lymph – plasma + RBC + WBC
   d) blood – plasma + RBC + WBC + platelets
9. Which one of the following hormones is naturally not found in plants?
   a) 2, 4–D b) GA3 c) gibberellin d) IAA
10. The number of chromosomes found in human beings are _____.
    a) 22 pairs of autosomes and one pair of allosomes
    b) 22 autosomes 1 allosomes
    c) 46 autosomes
    d) 46 pairs autosomes and 1 pair of allosomes
11. In a hexaploid wheat (2n = 6X = 42) the haploid (n) and basic (X) number of chromosomes respectively are
    a) n = 7 and x = 21 b) n = 21 and X = 21
    c) n = 7 and X = 7 d) n = 21 and X = 7
12. An inexhaustible resources is
    a) wind power b) soil fertility c) wild life d) all the above

Part - II

II. Answer any 22 questions. (Q.No.22 is compulsory) **7 x 2 = 14**

13. Why does the sky appear in blue colour?
14. Match the following :
    a) Fuel - Lead
    b) Moderator - Heavy water
    c) control rods - Cadmium rods
    d) Shield - Uranium
15. What is rust? Give the equation for formation of rust.
16. i) Solubility is the amount of solute dissolved in _____ g of solvent.
    ii) The value of ionic product of water at 25°C is _____.
17. How is diastema formed in rabbit?
18. Who discovered Rh factor? Why was it named so?
19. What is metastasis?
20. Identify the part A,B,C,D in the given figure.
    A) Telomere
    B) Secondary constraction
    C) primary constraction
    D) Satellite



21. What would happen if the habitat of wild animals is disturbed?
22. Three resistors of resistances 5 ohm, 3 ohm and 2 ohm are connected in series with 10 V battery. Calculate their effective resistance and the current flowing through the circuit.

Part - III

III. Answer any 7 questions. (Q.No.32 is compulsory) **7 x 4 = 28**

23. List any five properties of light.
24. Explain the experiment of measuring the real and apparent expansion of a liquid with a neat diagram.
25. Mention four cases in which there is no Doppler effect in sound?
26. Find the percentage of nitrogen in ammonia.
27. a) What happens when $MgSO_4.7H_2O$ is heated? Write the appropriate equation.
    b) Define solubility.

28. **Assertion and Reasoning :**
    a) If both A and R are true and R is correct explanation of A
    b) If both A and R are true, but R is not the correct explanation of A
    c) A is true but R is false d) both A and R are false
    Assertion : Corpus callosum is present in space between the duramater and piamater
    Reason : It serves to maintain the constant intracranial pressure
29. Write the physiological effects of gibberelling.
30. What do you understand by the term phenotype and genotype?
31. Differentiate between Type-1 and type-2 diabetes mellitus.
32. Calculate the pH of 1 x 10^{-4} molar solution of NaOH.

Part - IV

IV. Answer all the questions. ***(Draw diagrams wherever necessary)*** 3 x 7 = 21

33. a) State and Prove the law of conservation of linear momentum.

(OR)

    b) What is the nuclear reactor? Explain its essential parts with their functions.
34. a) i) Differentiate between hygroscopic substances and deliquescence.
        ii) How does pH play an important role in everyday life?

(OR)

    b) i) Differentiate soaps and detergents.
        ii) An organic compound 'A' is widely used as a preservative and has the molecular formula $C_2H_4O_2$. This compound reacts with ethanol to form a sweet smelling compound 'B'. Identify the compound 'A'.
35. a) Describe and name three stages of Cellular Respiration that Aerobic Organisms use to obtain energy from Glucose.

(OR)

    b) (i) Define Ethnobotany and write its importance.
        (ii) Write short notes about Biofortification.