

- I. Answer all the questions. Choose the most suitable answer 12 x 1 = 12
- In which of the following sport the turning of the effect of force used?
(a) swimming (b) tennis (c) cycling (d) hockey.
 - The value of universal gas constant _____
(a) 3.81 mol⁻¹ KJ-1 (b) 8.03 J mol⁻¹ K-1
(c) 1.38 mol⁻¹ KJ-1 (d) 8.31 J mol⁻¹ K-1.
 - In the nuclear reaction $6X^{12} \rightarrow \alpha$ decay zYA , the value of A & Z.
(a) 8, 6 (b) 8, 4 (c) 4, 8
(d) cannot be determined with the given data.
 - Identify the non – aqueous solution _____
(a) sodium chloride in water (b) glucose in water
(c) copper sulphate in water (d) sulphur in carbon-di-sulphide.
 - Which of the following represents a precipitation reaction?
(a) $A(s)+B(s) \rightarrow C(s)+D(s)$ (b) $A(s)+B(aq) \rightarrow C(aq)+D(l)$
(c) $A(aq)+B(aq) \rightarrow C(s)+D(aq)$ (d) $A(aq)+B(s) \rightarrow C(aq)+D(l)$.
 - Which of the following pairs can be the successive members of a homologous series?
(a) C₃H₈ and C₄H₁₀ (b) C₂H₂ and C₂H₄
(c) CH₄ and C₃H₆ (d) C₂H₅OH and C₄H₈OH
 - The endarch condition is the characteristic feature of:
(a) root (b) stem (c) leaves (d) flower
 - Which one of the following regarding blood composition is correct?
(a) Plasma – Blood + Lymphocyte (b) Serum – Blood + Fibrinogen
(c) Lymph – Plasma + RBC + WBC (d) Blood – Plasma + RBC + WBC + Platelets
 - In reflex action, the reflex arc is formed by _____
(a) brain, spinal cord, muscle (b) receptor, muscle, spinal cord
(c) muscle, receptor, brain (d) receptor, spinal cord, muscle
 - The hormone which has positive effect on apical dominance is:
(a) Cytokinin (b) Auxin (c) Gibberellin (d) Ethylene
 - Which of the following is used to produce products useful to humans by biotechnology techniques?
(a) enzyme from organism (b) live organism (c) vitamins (d) both (a) and (b).
 - Which is used to edit programs?
(a) Inkscape (b) Script editor (c) Stage (d) Sprite
- II. Answer any 7 of the following questions (Question No. 22 Compulsory) 7 x 2 = 14
- Why are traffic signals red in colour?
 - Match the following
 - Infrasonic - (a) Compressions
 - Echo - (b) 22 kHz
 - Ultrasonic - (c) 10 Hz
 - High pressure region - (d) Ultrasonography
 - Define Relative atomic mass.
 - Fill in the blanks
 - _____ is the longest period in the periodical table.
 - The chief ore of Aluminium is _____.
 - Why does the reaction rate of a reaction increase on raising the temperature?
 - Write the dental formula of the rabbit.
 - Define Triple fusion.
 - What do you understand by the term phenotype and genotype?
 - Define genetic engineering.
 - An electric iron consumes energy at the rate of 420 W when heating is at the maximum rate and 180 W when heating is at the minimum rate. The applied voltage is 220 V. What is the current in each case?

III. Answer any 7 of the following questions (Question No. 32 Compulsory) 7 x 4 = 28

23. List any five properties of light.
24. Distinguish between linear, cubical and superficial expansion.
25. Write any three features of natural and artificial radioactivity.
26. A is a reddish-brown metal, which combines with O₂ at < 1370 K gives B, a black coloured compound. At a temperature > 1370 K, A gives C which is red in colour. Find A, B and C with reaction.
27. What is called a homologous series? Give any three of its characteristics?
28. How does the light – dependent reaction differ from the light – independent reaction? What are the end product and reactants in each? Where does each reaction occur within the chloroplast?
29. List out the parasitic adaptations in leech.
30. Explain the approaches for protection of an abused child and the prevention of child sexual abuse.
31. How will you prevent soil erosion?
32. 16 grams of NaOH is dissolved in 100 grams of water at 25°C to form a saturated solution. Find the mass percentage of solute and solvent.

IV. Answer all the questions. Draw diagrams wherever necessary 3 X 7 = 21

33. (a) (i) What are the types of inertia? Give an example for each type.
(ii) Distinguish between the resistivity and conductivity of a conductor.

(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 differences between atoms and molecules?
(ii) Write any three applications of Avogadro's law.

(OR)

- (b) (i) How does pH play an important role in everyday life?
(ii) Define Hydrated salt.

35. (a) (i) Enumerate the functions of blood.
(ii) What are the structures involved in the protection of the brain?

(OR)

- (b) (i) Write the physiological effects of gibberellins.
(ii) What is respiratory quotient?