

SECTION A

1. Force of gravitation increases by 4 times 1
2. Define law of conservation of mass 1
Mass can neither be created nor destroyed during a chemical reaction. 1m
3. 1. Strict cleaning of the produce, Fumigation producing chemicals 2
 2. Maximum utilization of nutrient, Prevents pests and diseases from spreading to all the plants, Crops can give better returns(Any two) 1+1
4. a) What produces more severe burns, boiling water or steam? Give reasons for your answer. 2
Steam, as it contains more heat in the form of latent heat of vaporization 1m
 b) Tiny drops of water are seen on the outer surface of water bottles when taken out from the refrigerator
Due to condensation of atmospheric water vapour on the bottle. 1m
5. 1. Muscular tissue 1+1 2
 2. a. Epithelial tissue b. Connective tissue
6. Give reasons for the following: 3
 a) Clothes do not dry fast on a humid day
Due to lower rate of evaporation as water vapour is already present in the atmosphere 1m
 b) A table can be considered a solid
It has a definite volume and shape 1m
 c) Temperature remains constant during change of state
Heat supplied is used for breaking intermolecular forces and for changing state. 1m
 a) Give two differences between evaporation and boiling
Evaporation is a surface phenomenon, occurs at any temp below boiling point
Boiling is a bulk phenomenon, occurs at a specific temp called boiling point 2m
 b) Explain why air can be considered as a mixture and not a compound
Composition varies. Gases retain their original properties and do not form new substance. 1m
7. a) Define saturated solution. 3
Solution in which no more of solute can be added 1m
 b) A solution contains 40 gm of sugar in 160 gm of solution. Find mass by mass percentage concentration of the solution. $40/200 \times 100$ ½m 20% ½ m
8. a) Define the term chemical formula 3
Symbolic representation of the composition of a substance 1m
 b) Write the formula of the compound formed between Aluminium and Chlorine.
 $AlCl_3$ ½ m
 c) Define atomicity- **Number of atoms in the molecule of an element ½ m**
 d) What is the i) atomicity of Hydrogen molecule $H_2 = 2$ ½ m
 and ii) Number of atoms in PO_4^{3-} ion = **5 atoms** ½ m
9. Velocity - time graph. 1 + 2

Derivation for V 2 - U 2

10. (a) Instantaneous speed. 1
 (b) distance - time graph 1
 (c) displacement 5m 1
11. (a) Force 1
 (b) velocity = 5ms⁻¹ 1
 (c) Mass of the earth is more and less acceleration 1
12. (a) SI unit of work is joule, 1J = 1Nm 1+1+1
 (b) $W = F \times S$
 (c) $W = F \times S = 140 \times 15 = 2100J$
 (OR)
 statement of Newton's second law of motion.
 Formula for force.
 Force = - 0.07N
13. 1. Fish breed only during monsoon, , lack of availability of good quality seed. 1m 3
 2. Sting somewhat less, High honey collection capacity, Breed very well, Stay in a given beehive for long periods 2m

OR

1. Scientific management of animal livestock
 2. Milch- milk producing females
 Draught - The ones used for farm labour 1+1+1
14. 1. Diagram , Text book page no:62 fig 5.4 2+1 3
 2. Prokaryotic - single chromosome
 Eukaryotic - More than one
 Prokaryotic - Generally small
 Eukaryotic - Generally large (Any relevant point)
15. 1. Shrinks, loses water, osmosis, hypertonic solution. 3
 2. Provide turgidity and rigidity, Storage (any relevant point) 2+1
16. a) Which separation techniques/ apparatus will you use to separate the following 3
 i) A mixture of red and blue inks. **Evaporation** ½ m
 ii) Oil from water. **Separating funnel** ½ m
 b) Differentiate between physical and chemical changes.
Any twodifferences2m
 Also give an example of each. **One example of each** ½ m + ½ m
 C) Give two reasons why we can call alloys as mixtures
1. No fixed proportion. ½ m + ½ m
2. Exhibit properties of both the metals
17. a) Calculate the number of moles in 71 gm chlorine gas 5
 (Atomic mass of Cl =35.5 u)
 $N = m/M = 71/35.5 = 2 \text{ moles } 1m$
 b) Number of particles in 46 gm of Na (Sodium) Atoms (RAM of Na=23u)
 $N = m/M \times N_0 = 46/23 \times 6.022 \times 10^{23} = 12.044 \times 10^{23} 1m$

c)Molecular mass of C₂H₆ (RAM OF C=12 , RAM of H= 1)

$$2 \times 12 + 6 \times 1 = 24 + 6 = 30 \quad 1m$$

c) Define polyatomic ions

Groups of atoms carrying a charge 1m

Examples of positively charged and negatively charged polyatomic ions

NH₄⁺ ½ m and any negatively charged ion ½ m

OR

(i) Mole – one mole of any species (atoms, molecules, ions or particles) is that quantity in number having a mass equal to its atomic or molecular mass in grams 1

(ii) 1 mole = 6.022 x 10²³ in number – Relative mass in g. 2m

(iii) 1 mole of oxygen contain 6.022 x 10²³ molecules

0.25 mole of oxygen contain 6.022 x 10²³ x 0.25

= 1.505 x 10²³ molecules 2m

18. (a)Statement of law conservation momentum 1+2+2

proof for law conservation of

(b)Initial momentum = 500Kgms⁻¹

Final momentum = 800Kgms⁻¹

Change in momentum = 300Kgms⁻¹

Magnitude of force = 50N

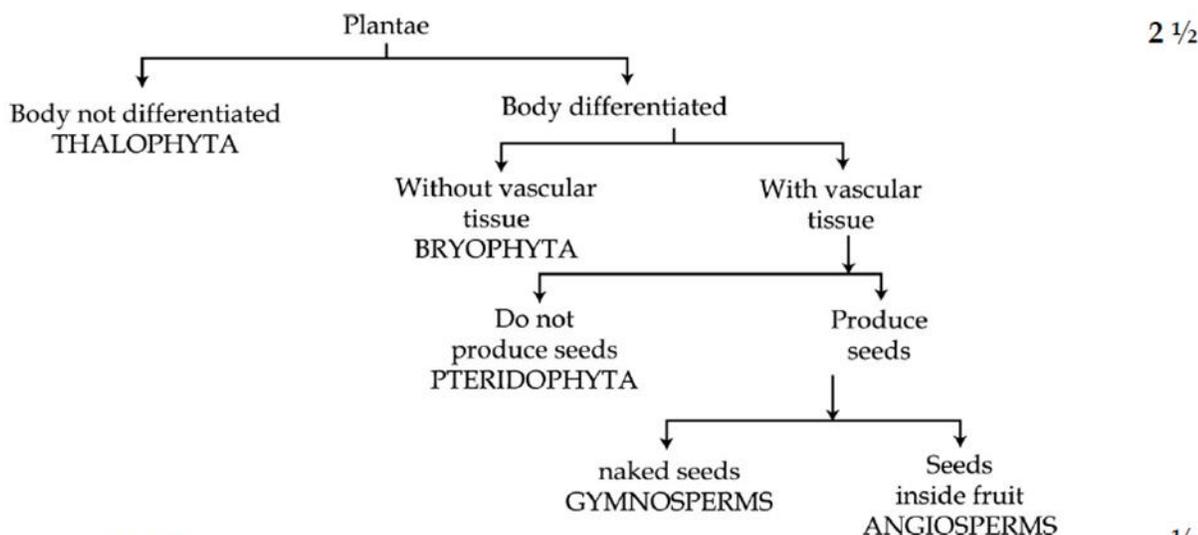
19. (a) density of gold = 19300Kg/ m³ 1+2+2

(b) Statement of universal law of gravitation.

(c) Derivation for $F = G \frac{m_1 m_2}{d^2}$

20. 1. Cell structure, Mode and source of nutrition, Body organisation 5

2. Use decaying organic material as food. Kingdom Fungi 3+2



(i) Thalophyta ½

(ii) Gymnosperms ½

(iii) Angiosperms ½

Monocot (Single cotyledon) ½

Dicot (Two cotyledons) ½

21. a. Presence of collenchymas tissues 5

b. Presence sclerenchyma tissues.

c. Transpiration, Exchange of gas

2. Transpiration, Loss of water in the form of water vapour

SECTION B

22. $P_1 / P_2 = F/4 / F/40 = 40/4 = 10/1$ 2
23. Ans: d 2
Relative density of salty water = $\frac{272-176}{272-192} = 6/5$
(2) Ans: b
24. Classify the following as homogeneous and heterogeneous mixtures 2
a) Sand and sawdust **Heterogeneous**
b) Salt and water **Homogeneous**
c) Chalk and water **Heterogeneous**
d) Iron filings and sulphur **Heterogeneous**
25. Classify the following as elements compounds and mixtures 2
a) H₂O **Compound**
b) Hydrogen **Element**
c) Oxygen in water **Mixture**
d) Soil **Mixture**
26. Presence of striations, Multinucleated 2
27. 1. Hydrochloric acid 2
2. Iodine