

Notes for valuers

- Value points are given for descriptive answers; accept the same ideas in the student's own words.
- Diagrams: neat diagram half the marks, correct labels the other half.

SECTION – A

10 × 1 = 10

1. B) kelvin
2. C) sublimation
3. C) air
4. B) milk
5. B) m/s^2
6. B) speed
7. C) mass
8. A) newton
9. B) 9.8 m/s^2
10. C) the same

SECTION – B

3 × 2 = 6

11. Sweat evaporates from the skin. During evaporation the particles take the energy (latent heat) needed from our body, so the body loses heat and we feel cool.
12. Homogeneous mixture: uniform composition throughout, e.g. salt solution, air.
Heterogeneous mixture: non-uniform composition, parts can be seen, e.g. sand and water, oil and water.
13. $u = 18 \text{ km/h} = 5 \text{ m/s}$, $v = 36 \text{ km/h} = 10 \text{ m/s}$, $t = 5 \text{ s}$
 $a = (v - u)/t = (10 - 5)/5 = 1 \text{ m/s}^2$

SECTION – C

2 × 4 = 8

14. 1. Sublimation: heat the mixture in a china dish covered with an inverted funnel; camphor sublimes and collects on the funnel. [1 each]
2. Dissolve the remaining salt and sand in water.
3. Filtration: sand stays on the filter paper as residue.
4. Evaporation: evaporate the filtrate to get common salt.
15. $m_1 = F/a_1 = 5/10 = 0.5 \text{ kg}$; $m_2 = F/a_2 = 5/20 = 0.25 \text{ kg}$
Total mass = 0.75 kg
 $a = F/m = 5/0.75 = 6.67 \text{ m/s}^2$

- 16. A)** First law: An object remains in its state of rest or of uniform motion in a straight line unless acted upon by an unbalanced force. Example: passengers fall forward when a bus stops suddenly.
Second law: The rate of change of momentum is proportional to the applied force and takes place in the direction of the force ($F = ma$). Example: a cricketer draws his hands back while catching a ball.
Third law: To every action there is an equal and opposite reaction, acting on different bodies.
Example: recoil of a gun / walking / a boat moves back when a person jumps out.
Marks: each law 2 + example 2/3 each; total 8.
- 16. B)** Velocity–time graph: object with initial velocity u at A, reaches velocity v at B after time t .
(i) Acceleration $a = \text{change in velocity} / \text{time} = (v - u)/t \rightarrow v = u + at$
(ii) Distance $s = \text{area under the graph} = \text{area of rectangle OACD} + \text{area of triangle ABD} = ut + \frac{1}{2} \times t \times (v - u) = ut + \frac{1}{2} \times t \times at = ut + \frac{1}{2}at^2$
Marks: graph 2, first equation 3, second equation 3.
- 17. A)** Activity: take crushed ice in a beaker with a thermometer and heat it slowly; note the temperature every minute.
Observation: temperature stays at 0°C (273 K) until all ice melts, then rises; it stays at 100°C (373 K) while water boils.
Graph: temperature on y-axis and time on x-axis, showing two flat portions at 0°C and 100°C .
Latent heat of fusion: heat energy needed to change 1 kg of solid into liquid at its melting point without a change in temperature.
Latent heat of vaporisation: heat energy needed to change 1 kg of liquid into gas at its boiling point at atmospheric pressure.
Marks: activity 3, graph 2, definitions 3.
- 17. B)** Chromatography: a technique to separate components of a mixture that dissolve in the same solvent.
Procedure: take a strip of filter paper; draw a pencil line 3 cm from the bottom; put a small drop of black ink on it; dip the strip in water so that the drop is above the water level; leave it undisturbed.
Observation: as water rises, different coloured bands appear because the dyes travel at different speeds.
Applications (any two): separating colours in a dye; pigments from natural colours; drugs from blood.
Marks: definition 1, procedure & diagram 4, observation 1, applications 2.

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