AL AMAL LEARNING CENTER

Federal Board SSC-II Examination

CHEMISTRY CHAPTER QUIZ

Class 10 | Unit 2

MATTER

Time Allowed: Section A 20 min; Sections B and C 2 h 40 min **Total Marks:** 65

Roll Number	Paper Version

Candidate Sign. _____ Invigilator Sign. _____

SECTION A (Marks 12)

Note: Section A is compulsory. Fill the correct bubble for each question. Each question carries 1 mark.

Q#	Question	A	B	C	D
1.	During melting of ice at 0 °C the temperature stays constant because the heat absorbed is used to:	○ Increase the kinetic energy of the particles	○ Overcome forces between particles, increasing their potential energy	○ Make the particles move faster	○ Decrease the volume of the ice
2.	Which process involves a gas changing directly into a solid?	○ Condensation	○ Sublimation	○ Deposition	○ Freezing
3.	Which statement about evaporation is correct?	○ It occurs throughout the liquid at a fixed temperature	○ It occurs at the surface of a liquid at any temperature below the boiling point	○ It is marked by rapid formation of bubbles	○ It occurs only at the boiling point
4.	On a heating curve, the flat region between D and E (liquid to gas) represents:	○ Solid being warmed	○ Melting	○ Boiling	○ Gas being warmed
5.	A fixed amount of gas at constant temperature is compressed to half its volume. Its pressure becomes:	○ Half	○ Double	○ Unchanged	○ Four times
6.	A gas has a volume of 300 cm^3 at 300 K. It is heated to 600 K at constant pressure. Its new volume is:	○ 150 cm^3	○ 300 cm^3	○ 600 cm^3	○ 900 cm^3
7.	At RTP, 1 mole of any gas occupies 24 dm^3. The volume of 0.5 mole of a gas at RTP is:	○ 6 dm^3	○ 12 dm^3	○ 24 dm^3	○ 48 dm^3
8.	Which gas diffuses fastest at the same temperature?	○ O_2	○ CO_2	○ H_2	○ N_2
9.	Water boils at a lower temperature on a high mountain because:	○ Atmospheric pressure is lower	○ Atmospheric pressure is higher	○ Gravity is stronger	○ There is more oxygen in the air
10.	Which of the following is NOT an example of sublimation?	○ Dry ice in open air	○ Naphthalene balls	○ Solid air freshener	○ Melting of ice cubes
11.	Liquid medicines generally act faster than tablets because:	○ Their particles are already dispersed and diffuse quickly	○ They have a higher molecular mass	○ They have no concentration gradient	○ They do not need to enter the bloodstream
12.	The rate of diffusion of a gas increases with temperature because:	○ Molecules lose kinetic energy	○ Molecules gain kinetic energy and move faster	○ Molecules become heavier	○ Attractive forces increase

SECTION B (11 × 3 = 33 Marks)

Note: Attempt all parts. Each question has an internal choice (OR).

(i)	Explain, using kinetic particle theory, why the temperature remains constant while ice melts to water.	**3**	**OR**	Calculate the volume occupied by 3.5 moles of a gas at RTP (1 mole = 24 dm^3).	**3**
(ii)	Differentiate between evaporation and boiling (three points).	**3**	**OR**	Explain why: (a) perfume applied on the palm makes it feel cold. (b) sweating cools the body.	**1.5+1.5**
(iii)	Sketch a heating curve for water and label the solid, melting, liquid, boiling and gas regions. State what happens to KE and PE in the flat regions.	**3**	**OR**	Interpret a cooling curve and explain the significance of its flat regions.	**3**
(iv)	State Boyle's law, write its mathematical form, and explain it with kinetic particle theory.	**1+1+1**	**OR**	State Charles's law, write its mathematical form, and explain it with kinetic particle theory.	**1+1+1**
(v)	A gas occupies 600 cm^3 at 2 atm pressure. What will be its volume at 4 atm if the temperature is constant?	**3**	**OR**	A gas occupies 250 cm^3 at 300 K. What will be its volume at 450 K if the pressure is constant?	**3**
(vi)	State Avogadro's law and explain it with kinetic particle theory.	**1+2**	**OR**	Explain the effect of increasing temperature on the pressure of a gas in a sealed container.	**3**
(vii)	How does increasing the external pressure affect the boiling point of a liquid? Explain with the example of a pressure cooker.	**1.5+1.5**	**OR**	Why does water boil at a lower temperature at high altitudes?	**3**
(viii)	Define diffusion. Explain diffusion of gases with the example of perfume spreading in a room.	**1+2**	**OR**	Describe, with the help of kinetic particle theory, how two gases mix when brought into contact.	**3**
(ix)	State Graham's law of diffusion. Which diffuses faster, H_2 (M = 2) or O_2 (M = 32)? Give a reason.	**1+1+1**	**OR**	Why is the diffusion of gases faster at higher temperatures?	**3**
(x)	Define sublimation. Give two examples and one practical application.	**1+1+1**	**OR**	Define deposition. Give two examples from daily life.	**1+2**
(xi)	Why is the diffusion rate of a drug important in the body?	**1.5+1.5**	**OR**	Explain why liquid medicines act faster than tablets, and state the purpose of controlled-release formulations.	**1.5+1.5**

SECTION C (4 × 5 = 20 Marks)

Note: Attempt all questions. Each question has an internal choice (OR).

Q3	Using kinetic particle theory, explain what happens to the particles, their energy and the temperature during: (a) melting (b) boiling (c) freezing (d) condensation	**4×1.25 =5**	**OR**	Draw and label a heating curve of a pure substance. Explain each segment (A to B, B to C, C to D, D to E, E onward) in terms of kinetic energy and potential energy.	**2+3**
Q4	(a) State Boyle's, Charles's and Avogadro's laws, each with its mathematical expression. (b) A gas at 1 atm has a volume of 4 dm^3. It is compressed at constant temperature to 2 dm^3. Find the new pressure.	**3+2**	**OR**	(a) A balloon has a volume of 3.0 dm^3 at 27 °C. It is heated to 77 °C at constant pressure. Calculate the new volume (T = °C + 273). (b) Explain the result of part (a) in terms of kinetic particle theory.	**2+3**
Q5	(a) Explain the process of diffusion using kinetic particle theory. (b) Discuss the effect of (i) molecular mass and (ii) temperature on the rate of diffusion.	**2+3**	**OR**	(a) Calculate how many times faster H_2 (M = 2) diffuses than CH_4 (M = 16) at the same temperature and pressure. (b) Explain your answer in terms of kinetic energy and particle velocity.	**2+3**

Q6	(a) Define sublimation and name two substances that sublime. (b) Explain three applications of sublimation (solid air fresheners, dye-sublimation printing, freeze-drying). (c) State one environmental or practical drawback of sublimation-based products.	**1+3+1**	**OR**	Analyze the impact of altitude on the boiling point of water and on cooking times. Give a detailed explanation based on kinetic particle theory and external pressure.	**5**

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