

BOARD OF INTERMEDIATE AND SECONDARY EDUCATION, PESHAWAR

Higher Secondary School Certificate (H.S.S.C.) Examination — Inter Part-I

Inter Part-I	CHEMISTRY PR - XI (A-I-A) (24)	2024
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Instructions (printed in Urdu on the sheet): 1. Each question has four circles; fill in only the circle of the correct answer. 2. Use a blue or black pen to fill the circles. 3. Filling more than one circle will be treated as a wrong answer.

SECTION - A

Time Allowed: 20 Min

Marks: 18

1	Better cooking in Pressure Cooker is an example of: ☐ Reduced P ☐ Increased P ☐ Constant P ☐ None
2	When coordination number of a crystalline substance is 0.54, the structure will be: ☐ Trigonal ☐ Tetrahedral ☐ Octahedral ☐ Cubic
3	The nature of bonds between atoms in graphite is: ☐ Ionic ☐ Covalent ☐ Molecular ☐ Metallic
4	Which of the given representation is incorrect form of law of mass action? ☐ $K_c = [\text{Product}]$ ☐ $K_c \times [\text{Product}]$ ☐ $K_c \times \frac{[\text{Product}]}{[\text{Reactant}]}$ ☐ None of these
5	Due to common ion effect, the solubility of a weak electrolyte is always ____ by addition of strong electrolyte. ☐ Enhanced ☐ Suppressed ☐ No change ☐ None
6	Conjugate acid-Base pairs are always differ by: ☐ 1H^+ ☐ 2H^+ ☐ 3H^+ ☐ 4H^+
7	The pH of the blood is: ☐ 6.4 ☐ 7.0 ☐ 7.4 ☐ 8
8	In ice cream, sugar is: ☐ Solute ☐ Mixture ☐ Solvent ☐ Dispersion phase
9	ΔH can be measured indirectly by applying. ☐ Gas Laws ☐ Avogadro's Law ☐ Hess's Law ☐ Faraday's Law
10	What is the mass of 0.5 moles of CaCO_3 ? ☐ 100g ☐ 75 g ☐ 50 g ☐ 25 g
11	Which of the given has highest percentage of nitrogen? ☐ $(\text{NH}_4)_2\text{SO}_4$ ☐ NH_4Cl ☐ NH_4NO_3 ☐ $(\text{NH}_4)_3\text{PO}_4$
12	What is the energy of an election in 1 st orbit of H-atom? ☐ -1312.36 KJ/mol ☐ -1012.36 KJ/mol ☐ -912.36 KJ/mol ☐ -427.36 KJ/mol
13	$\sqrt{v} \times Z$ is the mathematical form of: ☐ Avogadro's Law ☐ Moseley's Law ☐ Boyle's Law ☐ Graham's Law
14	The bond angle in NH_3 molecule is: ☐ 109.5° ☐ 107.5° ☐ 104.5° ☐ 101.5°
15	Total number of sigma bond in ethylene molecule is/are: ☐ 1 ☐ 3 ☐ 5 ☐ 6
16	All are correct except: ☐ 1 atm = 760 torr ☐ 760 torr = 760 mm Hg ☐ 760 torr = 101325 Pa ☐ 1 atm = 1.01325 KPa
17	The spreading of perfume in air is due to: ☐ Diffusion ☐ Effusion ☐ Low density ☐ Attraction with air
18	The B.P of water is greater than B.P of H_2S . this is due to the presence of: ☐ Hydrogen Bonding ☐ Dipole-dipole interaction ☐ London dispersion forces ☐ All these

Note: Time allowed for Section - B and Section - C is 2 Hours and 40 minutes.

SECTION - B

Marks: 40

Q2: Attempt any TEN parts. Each part carries FOUR marks.

- i) ΔH for solids and liquids become equal to ΔE . Why?
- ii) Calculate E° cell from the following half cell reaction:
 (a) $\text{Zn} \rightarrow \text{Zn}^{2+} + 2\text{e}^-$ ($E^\circ_{\text{ox}} = 0.76\text{V}$)
 (b) $\text{Cu}^{2+} + 2\text{e}^- \rightarrow \text{Cu}$ ($E^\circ_{\text{Red}} = 0.34\text{V}$)
- iii) What are state of the system and state functions?
- iv) Explain mole fraction?
- v) Write down characteristics of the catalyst?
- vi) Explain why the sum of PK_a and PK_b is always equal to 14?
- vii) What is meant by buffer action?
- viii) What is the role of a catalyst to affect the position of equilibrium?
- ix) Why density of ice is low as compared to water?
- x) Why the droplet of water is spherical?
- xi) How the existence of the hydrogen bonding can be proved?
- xii) Calculate the density in g/dm^3 of NH_3 at 25°C and 1.2 atm ?
- xiii) Give the reason that why O_2 molecule is paramagnetic?

SECTION - C

Marks: 27

Note: Attempt any THREE questions. All questions carry equal marks.

- Q14 (a) What is the %age yield of copper oxide when 24.8 g of copper carbonate (CuCO_3) is heated to produce 13.9g of copper oxide (CuO).
 (b) Write down the characteristics of neutron?
- Q15 (a) Explain Magnetic and spin quantum numbers in detail.
 (b) Explain elevation in boiling point of liquids?
- Q16 (a) Explain Graham's Law of diffusion and effusion.
 (b) Balance the following equations by oxidation number method.
 (i) $\text{Zn} + \text{HNO}_3 \rightarrow \text{Zn}(\text{NO}_3)_2 + \text{NO} + \text{H}_2\text{O}$
 (ii) $\text{Fe} + \text{V}_2\text{O}_3 \rightarrow \text{Fe}_2\text{O}_3 + \text{VO}$
- Q17: Write note on the following.
 (a) Partially Miscible Liquids (b) Electrolytic Cell (c) Boyle's Law

Notes

1. Typeset from the board paper. Board wording, spelling and notation are reproduced as printed, including slips; nothing has been corrected.
2. The source answer sheet arrived with the bubbles already shaded in. Options are given unmarked; no answer key is included.
3. The Section A instructions are printed in Urdu on the board sheet; an English rendering is given here.
4. The 2024 subjective sheet prints no section totals. Section B (ten parts $\times$ four marks = 40) and Section C (27) are given from the printed part marks and the pattern of the other Peshawar years.
5. Kept as printed: Q.12 "energy of an election"; Q.2's coordination number given as 0.54 (a radius ratio, as printed); Q.13's expression; Q.18 "this is due to the presence of".