

BOARD OF INTERMEDIATE AND SECONDARY EDUCATION, PESHAWAR

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

Inter Part-I	CHEMISTRY Paper – XI (SE) (20) · PR XI (SE) 20	Reappear 2020
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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 Minutes

Marks: 18

1	In phenol-water system, at a temp of 65.9°C, the homogeneous mixture of two components contain: ☐ 34% phenol + 66% water ☐ 34% water + 66% phenol ☐ 50% water and 50% phenol ☐ None of these
2	Which one is the strongest acid? ☐ HCL ☐ H ₂ SO ₄ ☐ HNO ₃ ☐ HClO ₄
3	Which one of the given theory of chemical kinetics gave the concept of orientation factor? ☐ Collision theory ☐ Transition state theory ☐ Kinetic molecular theory ☐ Molecular orbital theory
4	Activated complex is a substance which is: ☐ Stable ☐ Unstable ☐ Can be isolated ☐ Can exist as product
5	Who amongst the given, considered the moving electron to exhibit wave-like motion forming a standing wave: ☐ Erwin Schrodinger ☐ Bohr ☐ Rutherford ☐ Chadwick
6	ΔH can be measured indirectly by applying: ☐ Avogadro's law ☐ Gas laws ☐ Hess's law ☐ Faraday law
7	The oxidation state of sulphur in S ₂ O ₃ ²⁻ ion is..... ☐ -2 ☐ +2 ☐ +4 ☐ +6
8	Which gas diffuses fastest? ☐ NH ₃ ☐ HCl ☐ SO ₂ ☐ CO ₂
9	Device used to measure the surface tension: ☐ Barometer ☐ Monometer ☐ Stalagmometer ☐ Thermometer
10	How many dm ³ are there in 2.2 grams of CO ₂ . ☐ 22.4 dm ³ ☐ 11.2 dm ³ ☐ 1.12 dm ³ ☐ 3.011×10 ² dm ³
11	According to Plank's Quantum Theory the frequency of a quantum is equal to..... ☐ hcv ☐ $\frac{hc}{\lambda}$ ☐ $\frac{c}{\lambda}$ ☐ None of these
12	According to VSEPR theory the shape of H ₂ O is..... ☐ Linear ☐ Angular ☐ Trigonal planar ☐ Trigonal pyramid
13	Gases behave ideally at: ☐ Low temp and high pressure ☐ High temp and low pressure ☐ High temp only ☐ High pressure only
14	Vacuum distillation is used to purify liquids which are: ☐ Explosives ☐ Volatile ☐ Decomposed before their boiling point ☐ Inorganic in nature
15	Latent heat of vaporization of H ₂ O is..... ☐ 40.7 J/mol ☐ 40.7 kJ/mol ☐ 40.7 cal/mol ☐ 4.7 J/mol
16	Which one possess maximum lattice energy? ☐ NaCl ☐ KBr ☐ NaI ☐ LiCl
17	Which type of motion is present in solids..... ☐ Translational ☐ Rotational ☐ Vibrational ☐ All these
18	If K _c = K _p then Δn is..... ☐ Zero ☐ Greater than zero ☐ Less than zero ☐ Much higher

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

SECTION - B

Marks: 40

Q-II Answer any TEN parts. Each part carries FOUR marks. Avoid irrelevant writing/discussion.

1. Write four reasons, why the actual yield of a reaction is less than the theoretical yield?
2. Write a note on Pauli Exclusion Principle.
3. Define Resonance. What are its three conditions?
4. Give your arguments in favour of the statement, "Absolute Zero is a theoretical concept and not possible practically".
5. How the size and shape of a molecule affect the strength of short range forces, (London Dispersion Forces)? Give an example.
6. Differentiate between isomorphism and polymorphism. Give examples for both.
7. Derive the relation between " K_p " and " K_n " that is: $K_p = K_n (P/N)^{\Delta n}$?
8. What is leveling effect? How aqueous and anhydrous solutions affect the strength of various acids? Give examples.
9. What is rate of reaction? Write three postulates of collision theory of reaction rate.
10. Discuss briefly phenol – water system as an example of partially miscible liquids?
11. Differentiate between internal energy and enthalpy? Give mathematical expression for both.
12. Give the chemical formula of Rust? Write the chemical reactions involved in rust formation (corrosion of iron).
13. Calculate the mass of 1 dm³ of NH₃ gas at 30°C and 1000 mm Hg pressure, considering that NH₃ is behaving ideally.

SECTION - C

Marks: 27

Note: Attempt any THREE questions. All questions carry equal marks. Avoid irrelevant writing/discussion.

- Q-III (a) Derive an expression for the energy of the electron in an orbit by using Bohr's Atomic Model. (5)
 (b) What is Bond Order? How it can be calculated? Calculate bond order for O₂ molecule from its MOT diagrams. (1+1+2)
- Q-IV (a) Why real or non-ideal gases deviate from ideal behaviour. Derive Vauder Waal's equation. (2+3)
 (b) Using Born-Haber's cycle, calculate the lattice energy ($\Delta H^\circ_{\text{Lattice}}$) of NaCl. (4)
- Q-V (a) Balance the following reaction taking place in acidic medium by ion-electron method. (5)
 $\text{I}^- + \text{NO}_2 \rightarrow \text{I}_2 + \text{NO}$
 (b) Describe Raoult's law in detail. (4)
- Q-VI (a) What is buffer solution? Explain buffer action of both acids and bases (one example each) (1+3)
 (b) Heating 24.8 gram of copper carbonate in a crucible produced only 13.9 gram of copper oxide. What is the percentage yield of copper oxide? (5)
 The reaction is: $\text{CuCO}_3 \xrightarrow{\Delta} \text{CuO} + \text{CO}_2$

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. This is the 2020 supplementary (reappear) sitting; the objective sheet is headed "Chemistry Paper – XI (SE) (20)" and the subjective "PR XI (SE) 20 — Chemistry (New), Inter Part-I (Reappear)". The candidate name and roll number on the source answer sheet are omitted.
5. Kept as printed: "Differentiate" (Section B 6 and 11); "corrosion of iron" for iron; "Vauder Waal's"; Q.9 option "Monometer"; Q.11's first option "hcu".