



CHEMISTRY SSC-I

Inclusive Scheme of Studies 2024 (1200) Marks

SECTION – A (Marks 12)

Time allowed: 20 Minutes

Candidate Sign. _____

Supervisor Sign. _____

Answer Sheet No. _____

Version No.				
1	0	0	5	1

①	●	●	①	①
●	①	①	①	●
②	②	②	②	②
③	③	③	③	③
④	④	④	④	④
⑤	⑤	⑤	●	⑤
⑥	⑥	⑥	⑥	⑥
⑦	⑦	⑦	⑦	⑦
⑧	⑧	⑧	⑧	⑧
⑨	⑨	⑨	⑨	⑨

ROLL NUMBER						

①	①	①	①	①	①	①
①	①	①	①	①	①	①
②	②	②	②	②	②	②
③	③	③	③	③	③	③
④	④	④	④	④	④	④
⑤	⑤	⑤	⑤	⑤	⑤	⑤
⑥	⑥	⑥	⑥	⑥	⑥	⑥
⑦	⑦	⑦	⑦	⑦	⑦	⑦
⑧	⑧	⑧	⑧	⑧	⑧	⑧
⑨	⑨	⑨	⑨	⑨	⑨	⑨

Deleting/overwriting is not allowed.
Do not use lead pencil.

Fill the relevant bubble against each question according to curriculum:

Question	A	B	C	D	A	B	C	D
1. Chemistry mainly deals with the study of:	Living organisms	Matter and its interactions	Planets and stars	Historical events	☐	☐	☐	☐
2. Avogadro's constant represents the number of molecules in:	0.1 g of H ₂	14 g of N ₂	44 g of CO ₂	10 g of H ₂ O	☐	☐	☐	☐
3. The sum of oxidation numbers of all atoms in a sulfate ion (SO ₄ ²⁻) must be:	-2	-1	0	+2	☐	☐	☐	☐
4. Dissolving ammonium nitrate in water causes the container to feel cold. This shows the process is:	Neutralization	Exothermic	Endothermic	Combustion	☐	☐	☐	☐
5. For a reversible reaction, why might the reaction not go to completion?	Products never form	Forward reaction is faster than backward	Backward reaction occurs simultaneously	Energy is not involved	☐	☐	☐	☐
6. Which reaction products correctly show what happens when an acid reacts with a metal carbonate?	Salt + CO ₂ + H ₂ O	Salt + H ₂ + NH ₃	Salt + N ₂ + H ₂ O	Salt only	☐	☐	☐	☐
7. An element in Group I-A forms ions with charge:	-1	+1	+2	-2	☐	☐	☐	☐
8. Which trend is observed down the Group in Group I-A elements?	All become gases	Melting point increases	Reactivity decreases	Density increases	☐	☐	☐	☐
9. The approximate percentage of nitrogen (N ₂) in clean, dry air is:	10%	21%	78%	90%	☐	☐	☐	☐
10. Sulfur dioxide (SO ₂) is released into the air during:	Use of catalytic converters in cars and vehicle	Combustion of fossil fuels containing sulfur compounds	Melting of ice on glaciers	Rusting of iron in industry	☐	☐	☐	☐
11. Which of the following can have more than one structural formula?	CH ₄	C ₂ H ₆	C ₃ H ₈	C ₄ H ₈	☐	☐	☐	☐
12. An alkane is most likely to undergo:	Addition reaction	Neutralization reaction	Dehydration reaction	Substitution reaction	☐	☐	☐	☐

SUPPLEMENTARY TABLE

—1SA-I 26005-(B)—

Mass No	1	4	7	9	11	12	14	16	19	20	23	24	27	28	31	32	35.5	40	39	40
Symbol	H	He	Li	Be	B	C	N	O	F	Ne	Na	Mg	Al	Si	P	S	Cl	Ar	K	Ca
Atomic No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20



CHEMISTRY SSC-I

Inclusive Scheme of Studies 2024 (1200) Marks

32

Time allowed: 2:40 Hours

Total Marks Sections B and C: 48

SECTION – B (Marks 30)

Q. 2 Attempt the following parts.

(10 x 3 =30)

(i)	Identify the branch of Chemistry involved in the given statements: a. Large scale production of NH_3 by Haber's process. b. Breakdown of glucose gives energy to our body. c. Use of chlorofluoro carbons (CFCs) in refrigerator linked to depletion of ozone layer.	1+1 +1	OR	Show the following conversions by drawing their electrons dot structures: a. $\text{Na} \rightarrow \text{Na}^+$ b. $\text{Cl} \rightarrow \text{Cl}^-$	1.5 + 1.5
(ii)	Why solids have high density and very low compressibility whereas gases have opposite behavior? Explain briefly.	1.5 + 1.5	OR	Calculate the number of moles in a foil of Aluminum that weights 100 g.	03
(iii)	An element exists as two isotopes: • ^{64}X (abundance 30%) • ^{66}X (abundance 70%) Calculate the average relative atomic mass of element X	03	OR	Determine the number of Protons and Neutrons in given Isotopes: a. $^{23}_{11}\text{Na}$ b. $^{37}_{17}\text{Cl}$ c. $^{13}_6\text{C}$	1+1 +1
(iv)	Identify the given substances as solution, suspension or colloidal: a. Air b. Sand in water c. Jelly	1+1 +1	OR	Briefly describe: a. How a catalyst affects the reaction rate? b. How a catalyst affects the activation energy?	1+2
(v)	What is meant by 'element'? State one distinguishing feature that separates it from mixtures.	2+1	OR	How is ionic bond formed? Give one example of a compound having ionic bond.	2+1
(vi)	Using the bond energies given below, calculate the enthalpy change (ΔH) for the reaction: $\text{H}_2 + \text{Cl}_2 \rightarrow 2\text{HCl}$ Bond energies: $\text{H}-\text{H} = 436 \text{ kJ/mol}$, $\text{Cl}-\text{Cl} = 242 \text{ kJ/mol}$ and $\text{H}-\text{Cl} = 431 \text{ kJ/mol}$	03	OR	Justify the following statements: a. Fluorine has smaller shielding effect than Chlorine b. Fluorine has high ionization energy than Chlorine	1.5 + 1.5
(vii)	How is solubility affected by increasing temperature for given solutions: a. KCl in water (endothermic solution) b. $\text{Ca}(\text{OH})_2$ in water (exothermic solution)	1.5 + 1.5	OR	$\text{CuSO}_4 \cdot 5\text{H}_2\text{O}_{(\text{blue solid})} \rightleftharpoons \text{CuSO}_{4(\text{white solid})} + 5\text{H}_2\text{O}$ How heating will affect the equilibrium in given reaction?	03
(viii)	Briefly state the trend of metallic character along the group. Also give reason.	1.5 + 1.5	OR	Write chemical reaction when an acid reacts with carbonate. Describe the visible change that may appear.	2+1
(ix)	State the general trends observed down the group for elements of Group-I for their density, and reactivity.	1.5 + 1.5	OR	Name the three main types of chemical fertilizers commonly used in agriculture.	1+1 +1
(x)	How are 'dissolved oxygen' and 'essential minerals' beneficial for aquatic life? Describe briefly.	1.5 + 1.5	OR	What are substitution reactions? Which type of compounds shows these reactions?	2+1

SECTION – C (Marks 18)

Note: Attempt the following questions.

(3x6=18)

Q.3	Show covalent bond formation in given molecules using dot-and-cross structures: a. CO_2 b. H_2O c. CH_4	2+2 +2	OR	What is meant by 'molecular formula' and 'structural formula'? Give one example each. Show that $\text{C}_3\text{H}_6\text{O}_2$ can have more than one structural formula.	2+2 +1
Q.4	Explain the terms 'Acid' and 'Base' according to the Bronsted-Lowry theory. Identify the acid and base in the reaction: $\text{NH}_3 + \text{H}_2\text{O} \rightleftharpoons \text{NH}_4^+ + \text{OH}^-$	2+2 +2	OR	Discuss the functions of carbohydrates and proteins in human body. (any three specific functions each)	3+3
Q.5	Compare metals and non-metals in terms of their: a. Thermal conductivity b. Electrical conductivity c. Malleability and ductility	2+2 +2	OR	How ethane can be prepared by: a. Hydrogenation of alkynes b. Reduction of alkyl Halides	3+3

SUPPLEMENTARY TABLE

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Atomic No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20