

Marking Scheme Strictly Confidential (For Internal and Restricted use only) Senior Secondary School Supplementary Examination, July-2025 SUBJECT NAME: CHEMISTRY SUBJECT CODE:043 PAPER CODE: 56/S/3	
<u>General Instructions: -</u>	
1	You are aware that evaluation is the most important process in the actual and correct assessment of the candidates. A small mistake in evaluation may lead to serious problems which may affect the future of the candidates, education system and teaching profession. To avoid mistakes, it is requested that before starting evaluation, you must read and understand the spot evaluation guidelines carefully.
2	“Evaluation policy is a confidential policy as it is related to the confidentiality of the examinations conducted, Evaluation done and several other aspects. Its’ leakage to public in any manner could lead to derailment of the examination system and affect the life and future of millions of candidates. Sharing this policy/document to anyone, publishing in any magazine and printing in News Paper/Website etc may invite action under various rules of the Board and IPC.”
3	Evaluation is to be done as per instructions provided in the Marking Scheme. It should not be done according to one’s own interpretation or any other consideration. Marking Scheme should be strictly adhered to and religiously followed. However, while evaluating, answers which are based on latest information or knowledge and/or are innovative, they may be assessed for their correctness otherwise and due marks be awarded to them. In class-XII, while evaluating two competency-based questions, please try to understand given answer and even if reply is not from marking scheme but correct competency is enumerated by the candidate, due marks should be awarded.
4	The Marking scheme carries only suggested value points for the answers. These are in the nature of Guidelines only and do not constitute the complete answer. The students can have their own expression and if the expression is correct, the due marks should be awarded accordingly.
5	The Head-Examiner must go through the first five answer books evaluated by each evaluator on the first day, to ensure that evaluation has been carried out as per the instructions given in the Marking Scheme. If there is any variation, the same should be zero after deliberation and discussion. The remaining answer books meant for evaluation shall be given only after ensuring that there is no significant variation in the marking of individual evaluators.
6	Evaluators will mark(✓) wherever answer is correct. For wrong answer CROSS ‘X’ be marked. Evaluators will not put right (✓) while evaluating which gives an impression that answer is correct and no marks are awarded. This is most common mistake which evaluators are committing.
7	If a question has parts, please award marks on the right-hand side for each part. Marks awarded for different parts of the question should then be totalled up and written in the left-hand margin and encircled. This may be followed strictly.
8	If a question does not have any parts, marks must be awarded in the left-hand margin and encircled. This may also be followed strictly.
9	If a student has attempted an extra question, answer of the question deserving more marks should be retained and the other answer scored out with a note “Extra Question” .
10	No marks to be deducted for the cumulative effect of an error. It should be penalized only once.

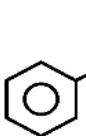
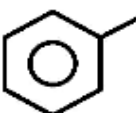
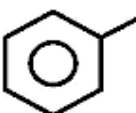
11	A full scale of marks 70 has to be used. Please do not hesitate to award full marks if the answer deserves it.
12	Every examiner has to necessarily do evaluation work for full working hours i.e., 8 hours every day and evaluate 20 answer books per day in main subjects and 25 answer books per day in other subjects (Details are given in Spot Guidelines).
13	Ensure that you do not make the following common types of errors committed by the Examiner in the past: - Giving more marks for an answer than assigned to it. • Wrong totalling of marks awarded on an answer. • Wrong transfer of marks from the inside pages of the answer book to the title page. Wrong question wise totalling on the title page. • Leaving answer or part thereof unassessed in an answer book. • Wrong totalling of marks of the two columns on the title page. • Wrong grand total. • Marks in words and figures not tallying/not same. • Wrong transfer of marks from the answer book to online award list. • Answers marked as correct, but marks not awarded. (Ensure that the right tick mark is correctly and clearly indicated. It should merely be a line. Same is with the X for incorrect answer.) • Half or a part of answer marked correct and the rest as wrong, but no marks awarded.
14	While evaluating the answer books if the answer is found to be totally incorrect, it should be marked as cross (X) and awarded zero (0) Marks.
15	Any un assessed portion, non-carrying over of marks to the title page, or totalling error detected by the candidate shall damage the prestige of all the personnel engaged in the evaluation work as also of the Board. Hence, in order to uphold the prestige of all concerned, it is again reiterated that the instructions be followed meticulously and judiciously.
16	The Examiners should acquaint themselves with the guidelines given in the “ Guidelines for spot Evaluation ” before starting the actual evaluation.
17	Every Examiner shall also ensure that all the answers are evaluated, marks carried over to the title page, correctly totalled and written in figures and words.
18	The candidates are entitled to obtain photocopy of the Answer Book on request on payment of the prescribed processing fee. All Examiners/Additional Head Examiners/Head Examiners are once again reminded that they must ensure that evaluation is carried out strictly as per value points for each answer as given in the Marking Scheme.

MARKING SCHEME 2025
CHEMISTRY (Theory)- 043
 QP CODE 56/S/3

Q. No.	Value points	Mark
SECTION A		
1.	(A)	1
2.	(C)	1
3.	(C)	1
4.	(D)	1
5.	(B)	1
6.	(D)	1
7.	(D)	1
8.	(A)	1
9.	(A)	1
10.	(C)	1
11.	(D)	1
12.	(A)	1
13.	(D)	1
14.	(A)	1
15.	(B)	1
16.	(D)	1
SECTION B		
17.	(a) A Galvanic cell which converts the energy of combustion of fuel directly into electrical energy. High efficiency, pollution free.	1 ½, ½
OR		
	(b) (i) H ₂ at cathode, O ₂ at anode (ii) Cu at cathode, Cl ₂ at anode.	½, ½ ½, ½
18.	(a) - Rate of reaction decreases on decreasing temperature. - Effective collisions decrease / Decrease in fraction of molecules having energy equal to or greater than E_a. (b) - Rate of reaction increases on adding a catalyst. Due to lowering of activation energy.	½ ½ ½ ½
19.	(a) Starch is made up of α-D glucose units while cellulose is made up of β-D glucose units. (b) Amino acids linked with each other in a specific sequence is a primary structure while secondary structure refers to the shape in which a long polypeptide chain can exist. (Or any other one suitable difference).	1 1
20.	'P' - On dilution, there is a slight increase in the number of ions of strong electrolytes whereas in weak electrolytes, the number of ions increases to a greater extent.	½ ½

		1
21.	(a) Because aryl halides do not undergo nucleophilic substitution with the anion formed by phthalimide. (b) Carbylamine reaction.	1 1
	SECTION C	
22.	(a) Beside being a nucleophile, methoxide acts as a strong base. Thus, elimination reaction predominates over substitution to give alkene as the main product and not ether. (b) Due to intramolecular H-bonding in o-nitrophenol, whereas intermolecular H-bonding in p-nitrophenol. (c) Alkoxide ion is less stable than the phenoxide ion, which is resonance stabilised. (Or any other suitable reason).	1 1 1
23.	$E_{\text{cell}} = E^{\circ}_{\text{cell}} - \frac{0.059}{2} \log \frac{[Mg^{2+}]}{[Cu^{2+}]}$ $E_{\text{cell}} = 2.71 - \frac{0.059}{2} \log \frac{[0.001]}{[0.0001]}$ $E_{\text{cell}} = 2.71 - \frac{0.059}{2} \log 10$ $E_{\text{cell}} = 2.71 - 0.0295$ $E_{\text{cell}} = 2.68 \text{ V}$	1 1 1
	(Deduct ½ mark for no or incorrect unit)	1
24.	Name: N-Ethylbenzamide. - No, 'X' will not undergo the Hoffmann bromamide degradation reaction. As it is a N-substituted amide.	1 1 ½ ½
25.	(a) Dibromidobis(ethane-1,2-diamine)cobalt (III) ion (b) sp ³ , paramagnetic (c) Ionisation isomerism	1 1 1
26.	(a) $A = \text{CH}_3 - \underset{\text{CH}_3}{\text{CH}} - \text{CH}_2\text{MgBr}$ $C = \text{CH}_3 - \underset{\text{CH}_3}{\text{CH}} - \text{CH}_2\text{OCH}_3$ $E = \text{CH}_3 - \underset{\text{CH}_3}{\text{CH}} - \text{CH}_2\text{Br}$ $B = \text{CH}_3 - \underset{\text{CH}_3}{\text{CH}} - \text{CH}_3$ $D = \text{CH}_3 - \underset{\text{CH}_3}{\text{C}} = \text{CH}_2$ $F = \text{CH}_3 - \underset{\text{CH}_3}{\text{CH}} - \text{CH}_2 - \text{CH}_2 - \underset{\text{CH}_3}{\text{CH}} - \text{CH}_3$	½ x 6

	OR	
	(b) (i) CH ₃ CH ₂ CN / Ethyl cyanide / Propanenitrile is formed.	1
	(ii) CH ₃ CH ₂ I / Iodoethane / Ethyl iodide is formed.	1
	(c) CH ₃ CH ₂ F / Fluoroethane / Ethyl fluoride is formed.	1
27.	(a) Because of more electrophilic carbonyl carbon and less steric hindrance.	1
	(b) Because of resonance stabilised conjugate base.	1
	(c) Base generates cyanide ion, which being a stronger nucleophile, readily adds to the carbonyl compounds.	1
28.	Let rate = k[A]^x[B]^y $\frac{\text{Rate 1}}{\text{Rate 4}} = \frac{1}{4} = \left(\frac{1}{4}\right)^x$ x = 1 or first order with respect to A Award 3 marks if the candidate calculates correct order with respect to A.	3
	SECTION D	
29.	(a) Spectrochemical series: Arrangement of ligands in the increasing order of their field strength.	1
	$\Delta_t = (4/9) \Delta_0$	1
	(b) (i) $[\text{Co}(\text{CN})_6]^{3-} < [\text{Co}(\text{NH}_3)_6]^{3+} < [\text{Cu}(\text{H}_2\text{O})_4]^{2+}$	1
	OR	
	(b) (ii) $t_{2g}^3 e_g^2$	1
	(c) The energy required to separate the degenerate d-orbitals into t _{2g} and e _g sets when ligands approach the central metal atom/ion.	1
30.	(a) Biofuel, provide energy, an instant source of energy, energy storage, cell wall formation (any two) (or any other two suitable functions)	1+1
	(b) A carbohydrate that cannot be hydrolysed further to give a simpler unit of polyhydroxy aldehyde or ketone.	1
	(c) (i) Rickets (in children) / Osteomalacia (in adults).	1
	OR	
	(c) (ii) Insulin.	1
	SECTION E	
31.	(a) (i) The extra pressure applied on the solution side, which just stops the flow of solvent across the semipermeable membrane.	1
	$\pi \propto C$ / because it depends on concentration or the number of moles of solute particles.	1
	(ii)	
	$P_t = P_A^\circ x_A + P_B^\circ x_B$	1
	$P_t = P_A^\circ (1 - x_B) + P_B^\circ x_B$	1
	$600 = 450 (1 - x_B) + 700 x_B$	1
	$x_B = 0.6$	½
	$x_A = 1 - x_B$	
	$x_A = 0.4$	½
	OR	

	(b) (i) Negative deviation Volume of the mixture decreases $\Delta H = -ve.$ (ii) $\Delta T_b = 100 - 99.48 = 0.52$ $\Delta T_b = K_b \cdot m$ $0.52 = 0.52 \times \frac{W_B}{M_B} \times \frac{1000}{W_A}$ $W_B = \frac{342}{1000} \times \frac{500}{1}$ $= 171 \text{ g.}$ (Deduct ½ mark for no or incorrect unit)	1 ½ ½ 1 1 1
32.	(a) (i) $P =$  $R =$  $Q =$  $S =$  (ii)  $+$  OR (b) (i) (I) $\text{CH}_3\text{COCH}_3 \xrightarrow[\text{Conc. HCl}]{\text{Zn-Hg}} \text{CH}_3\text{CH}_2\text{CH}_3$ (II) $\text{C}_6\text{H}_5\text{COCH}_3 \xrightarrow[\text{Conc. HCl}]{\text{Zn(Hg)}} \text{C}_6\text{H}_5\text{CH}_2\text{CH}_3 \xrightarrow[\text{(ii) H}_3\text{O}^+]{\text{(I) KMnO}_4, \text{ KOH}} \text{C}_6\text{H}_5\text{COOH}$ (III) $\text{C}_6\text{H}_5\text{CH}_2\text{Cl} \xrightarrow{\text{NaCN}} \text{C}_6\text{H}_5\text{CH}_2\text{CN} \xrightarrow[\Delta]{\text{H}^+, \text{H}_2\text{O}} \text{C}_6\text{H}_5\text{CH}_2\text{COOH}$ (ii) (I) Benzaldehyde will form a silver mirror on warming it with Tollens' reagent, whereas Phenol will not. (II) Butan-2-one on heating with NaOH & I₂ will give yellow ppt of CHI₃, whereas butanal will not. (Or any other suitable chemical test)	1 x 4 1 1 1 1 1
33.	(a) (i) $2\text{MnO}_2 + 4\text{KOH} + \text{O}_2 \rightarrow 2\text{K}_2\text{MnO}_4 + 2\text{H}_2\text{O}$ $3\text{MnO}_4^{2-} + 4\text{H}^+ \rightarrow 2\text{MnO}_4^- + \text{MnO}_2 + 2\text{H}_2\text{O}$ (ii) (I) Due to the absence of unpaired electrons in d-orbitals. / no d-d transition.	1 1 1

	(II) Due to the low $\Delta_{\text{hyd}}H^\circ$ and high $\Delta_a H^\circ$ of Cu^{2+} , whereas Mn^{2+} has lower $\Delta_a H^\circ$ as well as lower $\Delta_{\text{hyd}}H^\circ$. /Due to the low $\Delta_{\text{hyd}}H^\circ$ and high $\Delta_a H^\circ$ of Cu^{2+} , whereas Mn^{2+} is highly stable due to its $3d^5$ configuration.	1
	(III) Due to the presence of a greater number of unpaired electrons, resulting in strong interatomic interactions / metallic bonding.	1
	OR	
	(b) (i)	
	(I) $\text{Cr}_2\text{O}_7^{2-} + 8\text{H}^+ + 3\text{H}_2\text{S} \rightarrow 2\text{Cr}^{3+} + 7\text{H}_2\text{O} + 3\text{S}$	1
	(II) $2\text{Cu}^{2+} + 4\text{I}^- \rightarrow \text{Cu}_2\text{I}_{2(\text{s})} + \text{I}_2$	1
	(ii)	
	(I) Due to lanthanoid contraction.	1
	(II) Due to more number of unpaired electrons from ns and (n-1)d in chromium as compared to manganese.	1
	(III) Due to the higher value of the third ionisation enthalpy of zinc.	1