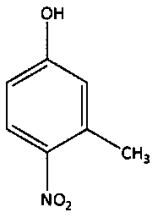
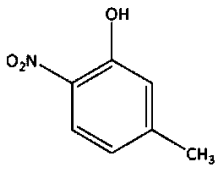
COMMON PRE-BOARD EXAMINATION

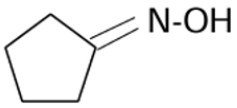
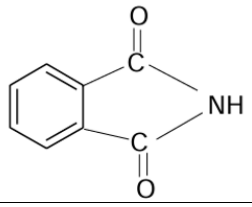
CHEMISTRY-Code No. 043

Class-XII-(2025-26)

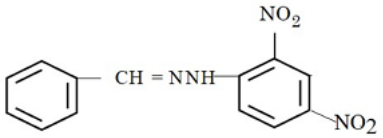
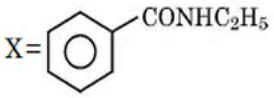
SET: 1 ,2,3 MARKING SCHEME

	Section-A Question 1 to 16 are multiple choice questions. Only one of the choices is correct. Select and write the correct choice as well as the answer to these questions	
1.	(d) 0·0125	1
2.	(c) 0.51×10^{-3} M	1
3.	(b) Sc^{3+}	1
4.	(d) $[CoCl_6]^{3-}$	1
5.	(a)2-Methylbutane	1
6.	(a) n-pentyl chloride	1
7.	d) Phenol and picric acid	1
8.	(d) n-butyl alcohol	1
9.	(c)CO,HCl&CuCl	1
10.	(b)O_2NCH_2COOH	1
11.	(d) $CH_3CH_2NH_2$	1
12.	(a) Starch	1
13.	C. A is true but R is false.	1
14.	C. A is true but R is false.	1
15.	D. A is false but R is true	1
16.	A. Both A and R are true, and R is the correct explanation of A.	1
	Section-B Question No. 17 to 21 are very short answer questions carrying 2 marks each.	
17.	**Attempt either option A or B** A. Correct mechanism(1+½+½) B.	2

	(i) .   (½+½) (ii) 2-methylpropene (1)	
18.	$T_b - T_b^0 = i \times 0{\cdot}52\ K\ Kg\ mol^{-1} \times 1\ mol\ Kg^{-1}$ $\alpha = \frac{i-1}{n-1}$ n=5 $0{\cdot}6 = \frac{i-1}{5-1}$ (1) i = 3·4 $T_b - 373\ K = 3{\cdot}4 \times 0{\cdot}52 \times 1$ $T_b = 1{\cdot}768 + 373\ K$ (1) T_b=374.768K(If boiling point of water is 373.15K then T_b= 374.918K)	2
19.	i)First order (1) ii)k/2.303 (1)	2
20.	$[Co(NH_3)_6]^{3+}$ Electronic configuration , d^2sp^3 (1) $[Ni(NH_3)_6]^{2+}$ Electronic configuration ,sp^3d^2. (1)	2
21.	(i)Aniline,Tribromoaniline (½+ ½) (ii)N-methylbut-3-en-2-amine (1)	2
	Section-C Question No. 22 to 28 are short answer questions, carrying 3 marks each.	
22.	$\Delta T_f = K_f\ m$ $m = \Delta T_f / K_f$ m= 0.3/1.86 = 0.16m $m = \frac{x_2 \text{ X } 1000}{M_A}$ (1) $x_2 = \frac{0.16\ X\ 18}{1000} = 2.88 \text{ X } 10^{-3}$ $\frac{p_1^0 - p_1}{p_1^0} = x_2$ $\frac{24.8 - p_1}{24.8} = 2.88 \text{ X } 10^{-3}$ (1) $p_1^0 - p_1 = x_2\ p_1^0$ = $2.88 \text{ X } 10^{-3} \times 24.8$ mm Hg (1) = 0.07 mm Hg	3
23.	Cell reaction (1) Ecell =2.71 - 0.0295= 2.68V (2)	3

24.	(i) $Cr_2O_7^{2-}(orange) + 2OH^-(aq) \rightarrow 2CrO_4^{2-}(yellow) + H_2O(l)$ (1) $2CrO_4^{2-}(yellow) + 2H^+(aq) \rightarrow Cr_2O_7^{2-}(orange) + H_2O(l)$ (1) (ii)$8MnO_4^-(aq) + 3S_2O_3^{2-}(aq) + H_2O(l) \rightarrow 8MnO_2 + 6SO_4^{2-} + 2OH^-$ (1)	3
25.	(i)Due to large surface area and ability to show variable oxidation states (1) (ii)Due to high value of third ionisation enthalpy (1) (iii)5f, 6d and 7s levels in actinoids are of comparable energies. (1)	3
26.	(i) Iodocyclohexane(structure) – 1 (ii) Benzene(structure) – 1 (iii) CH_3-CH_2-CH_2-ONO - 1	3
27.	(Attempt any 3) (i) Williamsons synthesis $C_6H_5ONa+C_2H_5Cl$ (1) (ii)(i) $CH_3COCH_2CH_3+CH_3CH_2MgBr$,(ii)$H_2O/H^+$ (1) (iii)Zn/Δ (1) (iv)PCC/CH_2Cl_2 (1)	3
28.	(i)  (ii) HOOC - CH_2 - CH_2 - CH_2 - CH_2 – COOH (iii) 	3
Section D Question No. 29 & 30 are case-based/data -based questions carrying 4 marks each.		
29.	(i) $2\Lambda^0m(NaI)+ \Lambda^0m(CH_3COO)_2Mg -2 \Lambda^0m(CH_3COONa) = 25.96\ S\ cm^2\ mol^{-1}$ **(1)** **OR** (i)Cathode H_2 , Anode – Cl_2 (ii)8 F = 8 x96500 = 771880C (1) (iii) cell constant G* = k x R (2) k= G*/R = 0.146/ 1000 = 1.46 x 10^{-4} Scm^{-1}. $\Lambda m = \frac{1.46 \times 10^{-4} \times 10^3}{0.01} = 14.6\ Scm^2mol^{-1}$	1+1+2

30.	(i)Meridional isomer of $[Co(NH_3)_3Cl_3]$. (1) OR $[Pt(NH_3)_2Cl(NO_2)]$). (ii)EDTA $^{4-}$, Structure (½+ ½) (iii)(a) $[Cr(NH_3)_3Cl_3]$, , $[Cr(NH_3)_5Cl]Cl_2$, $[Cr(NH_3)_6]Cl_3$ (1+1) (b) t_2g^5	1+1+2
	Section-E Question No. 31 to 33 are long answer type questions carrying 5 marks each.	
31.	(i)k increases. Reason: k is proportional to the rate of the reaction/temperature of the reaction.(½+ ½) Ea unchanged/No effect. Reason: Ea only depends on the nature of reactants / depends on the difference between the energy of activated complex and reactants. (½+ ½) (ii)n=$\frac{1}{2}$ (1) (iii $\log \frac{2k_1}{k_1} = \frac{E_a}{19{\cdot}15}\left[\frac{1}{298}-\frac{1}{308}\right]$ (1) $0{\cdot}3 = \frac{E_a}{19{\cdot}15}\left[\frac{10}{298\times308}\right]$ $E_a = \frac{0{\cdot}3\times19{\cdot}15\times298\times308}{10}$ E_a= 52729 $Jmol^{-1}$ or 52.729 $kJmol^{-1}$ (1) OR (i) Because molecularity of each elementary reaction in complex reaction may be different and hence meaningless for overall complex reaction whereas order of a complex reaction is experimentally determined by the slowest step in its mechanism and is therefore applicable for both(1) (ii) Rate of the reaction will increase. Rate constant remains same.(1) (iii) K=0.693/1386 = $5x10^{-4}$ s^{-1} (1) (iv) x=1 ,y=0 rate=$k[A]^1[B]^0$ (2)	5
32.	(i)Deoxy ribose sugar,Nitrogenous base&Phosphoric acid (1x5) (ii)Native Protein –Biologically active with proper 3D structure Denatured Protein-Biologically inactive with 3D structure is destroyed(any relevant points of difference) (iii)Stores genetic information,Protein synthesis (iv)any one point of difference (v)any one example for each OR (i)Functional group carbons are involved in glycosidic linkage,cannot reduce Tollens and Fehlings reagent(1) (ii)β-D glucose and β-D galactose.(½+ ½) (iii)Glycogen, Structure similar to amylopectin.(½+ ½)	5

	(iv)Equation (1) Shows the presence of a primary alcoholic group(1)	
33.	(i)  (1M) (ii) A= $CH_3CH=CHCN$ / But-2-ene nitrile B= $CH_3CH=CHCHO$ / But-2-enal (½+ ½) $CH_3CH=CHCN \xrightarrow[2.\ H_2O]{1.\ DIBAL\text{-}H} CH_3CH=CHCHO$ (1M) (iii)  (½+ ½) **Name:** N-Ethylbenzamide. No, 'X' will not undergo the Hoffmann bromamide degradation reaction. As it is a N-substituted amide. (½+ ½) OR (i)Benzaldehyde undergo Tollen's test , Ethanol will not (1M) (ii)(a) $CH_3CH_2CH(OCH_3)_2$ (1) (b) $CH_3CH_2CH_3$ (1) (iii)Equations (a) Gabriel phthalimide synthesis (b)Carbylamine reaction (1+1)	5