S.N.B.P's International School
Academic Year 2025-26

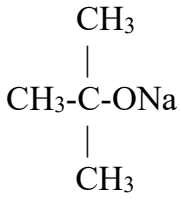
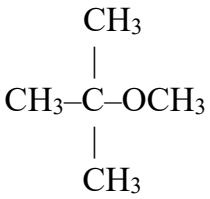
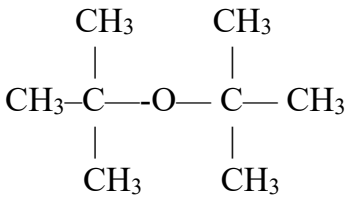
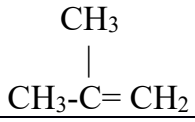
Periodic Test – I

Class: XII **SET B** **Day : Wednesday**
Subject: Chemistry (043) **Date : 09/07/2025**
Marks: 40 **Time : 2 Hours**

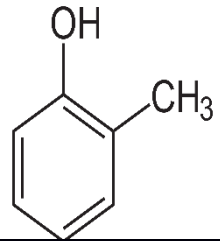
General Instructions:

1. There are 18 questions in all. All questions are compulsory
2. This question paper has five sections: Section A, Section B, Section C, Section D and Section E. All the sections are compulsory.
3. Section A contains 6 MCQs & 2 Assertion and Reason based question of 1 mark each
4. Section B contains 3 questions of 2 marks each
5. Section C contains 4 questions of 3 marks each
6. Section D contains 1 Case based question of 4 mark each and
7. Section E contains 2 long answer question of 5 marks each.
8. There is no overall choice. However, an internal choice has been provided in section B, C, E. You have to attempt only one of the choices in such questions.
9. Use of calculators is not allowed.

Question No.		Marks
	SECTION A **(Section A consists of 6 Multiple choice questions and 2 Assertion and Reason based questions carrying 1 mark each)**	
1.	Maximum amount of solid solute that can be dissolved in a specified amount of a given liquid solvent does not depend upon: a) Temperature b) Nature of solute c) Pressure d) Nature of solvent	1
2.	What should be the correct IUPAC name for diethyl bromomethane: a) 1-Bromo-1,1- diethylmethane b) 3-Bromopentane c) 1-Bromo-1-ethylpropane **d)** 1-Bromopentane	1

3.	Ethanol was first prepared by ---------- method: a) Natural gas b) Water gas c) Destructive distillation of wood Fermentation of carbohydrate	1
4.	The major product formed when tertiary butyl bromide react with sodium methoxide: $(CH_3)_3Br + NaOCH_3$ gives a)  b)  c)  d) 	1
5.	IUPAC name of the compound CH_2-CH_2-OCH_3 is —  a) 1-methoxy-1- methylethane b)2-methoxy-2- methylethane c) methoxy propane d) isopropyl methyl ether	1
6.	Which reagent will you use for the following reaction? $CH_3CH_2CH_2CH_3$ ———→ $CH_3CH_2CH_2CH_2Cl + CH_3CH_2CH_2CHClCH_3$ a) Cl_2 /UV light b) $NaCl + H_2SO_4$ c) Cl_2 gas in dark **d)** Cl_2 gas in the presence of iron in dark	1

7.	**Question 7 and 8 are Assertion and Reason based question:** **Directions: In the following questions statement of Assertion(A) is followed by a statement of Reason(R) mark the correct choice as:** a) Both A and R are true and R is a correct explanation of A b) Both A and R are true but R is not the correct explanation of A c) A is true but R is false d) A is false and R is true e) A and R both are false **Assertion (A):** phenol is basic in nature **Reason (R):** phenoxide ion is less resonance stabilized than phenol	1
8.	**Assertion (A):** When a volatile solute is added to water, boiling point of water increases. **Reason (R):** When a volatile solute is added to volatile solvent elevation in boiling point is observed.	1
	SECTION B **(Section B consists of 3 Very Short questions carrying 02 marks each)**	
9.	H_2S,a toxic gas with rotten egglike smell is used for qualitative analysis.If the solubility of H_2S in water at STP is 0.195 mole, calculate Henry's law constant.	2
10.	Give IUPAC names of following compounds: i) CH_2=CH–CH_2 Cl ii) CH_3 CH(Cl) CH(Br)CH_3	2
11.	Alcohols are comparatively more soluble in water than hydrocarbons of comparable molecular masses. Explain this fact.	2
	SECTION C **(Section C consists of 4 Short Answer type questions carrying 03 marks each)**	
12.	Write the equations for the preparation of 1-iodobutane from i)1-butanol ii) 1-chlorobutane iii) but-1-ene	3
13.	Write the name of reagents and equations for the preparation of following ethers by Williamson synthesis. i) 1-propoxypropane ii) Ethoxy benzene	3

	iii) 1-methoxy ethane	
14.	Write IUPAC names of following compounds: i) CH_3-O-CH_2 -CH-CH_3 CH_3 ii) CH_3- CH-CH–C- CH_3 OH CH_3 CH_3 iii) 	3
15.	45g of ethylene glycol ($C_2H_6O_2$) is mixed with 600g of water. Calculate: a) the depression in freezing point b) the freezing point of the solution (Kf for water = 1.86 K Kg/ mol)	3
	SECTION D **(Section D consists 1 Case based study questions carrying 04 marks each)**	
16.	**Read the following passage given below and answer the following questions.** Nucleophilic substitution reactions are of two types: substitution nucleophilic bimolecular and substitution nucleophilic unimolecular depending on molecules taking part in determining the rate of reaction. The reactivity of alkyl halide towards S_N1 and S_N2 reactions depends on various factors such as steric hindrance, stability of intermediate or transition state and polarity of the solvent. S_N2 reaction mechanism is mostly favoured by primary alkyl halide then secondary and then tertiary. This order is reversed in case of S_N1 reactions. i) Isopropyl chloride undergoes hydrolysis by a) S_N1 mechanism b)S_N2 mechanism c)S_N1 and S_N2 mechanism d)Neither S_N1 no S_N2 mechanism ii) Tertiary alkyl halides are practically inert to substitution by	4

	S_N2 mechanism because of a) Insolubility b) Instability c)Inductive effect d)Steric hindrance iii) Which of the following is the correct order of decreasing S_N2 reactivity? a) $RCH_2X > R_2CHX > R_3CX$ b) $R_3CX > R_2CHX > RCH_2X$ c) $R_2CHX > R_3CX > RCH_2X$ d) $RCH_2X > R_3CX > R_2CHX$ iv) An organic molecule necessarily shows optical activity if it - a) Contains asymmetric carbon atom b) Is non-polar c) Is non-superimposable on its mirror image d) Is superimposable on its mirror image	
	SECTION E **(Section E consists of 2 Long Answer type questions carrying 05 marks each)**	
17.	A solution containing 30g of non-volatile solute exactly in 90g of water has a vapour pressure of 2.8 kPa at 298 K. Further,18g of water is then added to the solution and new vapour pressure becomes 2.9 kPa at 298 K. Calculate: a) molar mass of the solute b) vapour pressure of water at 298 K	5
18.	Write the products in the following reactions: a) $CH_3\text{-}CH(CH_3)\text{-}O\text{-}CH_2\text{-}CH_3 \xrightarrow{HI}$? + ? **b)** $CH_3\text{-}CH{=}CH\text{-}CH_2\text{-}OH \xrightarrow{PCC}$? c) $CH_3\text{-}CH_2\text{-}CH(CH_3)\text{-}CHO \xrightarrow{NaBH_4}$? d) $CH_3\text{–}CH{=}CH_2 \xrightarrow{H_2O/H^+}$? e) $C_6H_5\text{–}OH \xrightarrow{Zn\ dust}$?	5