

#### INDIAN SCHOOL SOHAR CHEMISTRY THEORY (043) UNIT TEST 1 (2024-25)



MAX. MARK : 20 TIME : 40 MINUTES

CLASS : XII DATE : 26/05/24

#### General instructions:

- 1. There are **10** questions in this question paper with internal choice.
- 2. SECTION A- consists of 6 multiple-choice questions carrying 1mark each.
- 3. SECTION **B** consists of 1 very short answer questions carrying **2** marks each.
- 4. SECTION C- consists of 1 short answer questions carrying 3 marks each.
- 5. SECTION **D-** consists of 1 case-based question carrying **4** marks.
- 6. SECTION E- consists of 1 long answer questions carrying **5** marks with internal choice.
- 7. All questions are compulsory.
- 8. Use of log tables and calculators is not allowed

### SECTION – A

## The following questions are multiple –choice with one correct answer. Each question carries 1 mark. There is no internal choice in this section.

1.	A tertiary alcohol is obtained by the reaction of Grignard reagent with:	1	
	a) Butanone		
	b) Propanone		
	c) Acetone		
	d) All of the above		
2.	Tertiary alkyl halides are practically inert to substitution by SN 2 mechanism because of	1	
	a) steric hindrance		
	b) inductive effect		
	c) instability		
	d) insolubility		
3.	Which of the following has the highest freezing point?	1	
	a) 1 M Glucose		
	b) 1 M NaCl		
	c) 1 M CaCl <sub>2</sub>		
	d) 1 M AlF <sub>3</sub>		
4.	Which is the correct increasing order of boiling points of the following compounds?	1	
	1-Iodobutane, 1-Bromobutane, 1-Chlorobutane, Butane		
	a) Butane < 1-Chlorobutane < 1-Bromobutane < 1-Iodobutane		

- b) 1-lodobutane < 1-Bromobutane < 1-Chlorobutane < Butane
- c) Butane < 1-lodobutane < 1-Bromobutane < 1-Chlorobutane
- d) Butane < 1-Chlorobutane < 1-Iodobutane < 1-Bromobutane

# In the following questions (Q.no.5and 6) a statement of assertion followed by a statement of reason is given. Choose the correct answer out of the following choices:

- (a) Assertion reason both are correct statements and reason is the correct explanation for assertion.
- (b) Assertion reason both are correct statements, but reason is **not** the correct explanation for assertion.
- (c) Assertion is correct statement, but reason is wrong statement.
- (d) Assertion is wrong statement, but reason is correct statement.

- Assertion : Tertiary alcohols gets converted into an alkene instead of a carbonyl compounds in the presence of heated metallic copper.
  - **Reason** : Tertiary alcohols prefer to undergo dehydrogenation instead of dehydration in the presence of heated copper.
- **6. Assertion :** Chlorobenzene is less reactive than benzene towards the electrophilic substitution reaction.
  - **Reason** : Resonance destabilises the carbo cation.

#### SECTION B

At 10% solution by mass of sucrose in water has freezing point of 269.15 K. Calculate the 2 freezing point of 10% glucose solution in water if freezing point of pure water is 273.15 K. (Molar mass of sucrose 342 gram/mole.)

#### SECTION C

- A. Protonation of phenol is difficult, whereas ethanol easily undergoes protonation. Give reason.
  - **B**. Name the reagents used in the following reactons:
    - i) Bromination of phenol to 2,4,6-tribromophenol
    - ii) Chloroethane to butane.

#### SECTION D

## The following question is a case-based question. Read the passage carefully and answer the four questions that follow.

9. Osmosis and osmotic pressure play a significant role in biological process. Osmotic pressure 4 is a colligative property and depends on the concentration of solute and not on its nature. The osmotic pressure of human blood is 8.21 atm at 27°Celsius. It is interesting to note that a 0.91% (mass by volume) solution of sodium chloride known as saline water is isotonic with fluids inside the human red blood cells. In this solution, the corpuscles neither swells, nor shrink. Therefore, medicines are mixed with saline water before being injected into the veins.

A. Choose the most appropriate answer:-

i) The osmotic pressure of equimolecular solutions of glucose , sodium chloride and barium chloride will be in the order.

a.	$BaCl_2 > NaCl > glucose$	c. Glucose > BaCl <sub>2</sub> > NaC
	- 0	

b.	$NaCl > BaCl_2 > Glucose$	d. BaCl <sub>2</sub> > glucose

- ii) Isotonic solution have
  - a. same Boiling point.
- c. same vapour pressure.

> NaCl

- b. same melting point. d. same osmotic pressure.
- **B.** A solution containing 10.2 g of glycerine per litre is found to be isotonic, with a 2% solution of glucose. Calculate the molar mass of glycerine.

#### OR

Calculate the molarity of a solution containing 7.0g of sodium hydroxide in 875cm<sup>3</sup> of solution.

#### SECTION E

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#### The following question is a long answer type, carrying five marks with an internal choice.

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- **10. A.** How the following conversions can be carried out?
  - i) *tert*-butylbromide to isobutylbromide.
  - ii) Phenol to Benzoic acid
  - iii) 2-bromopropane to 1-methoxy propane

**B.** Write the mechanism of acid-catalyzed hydration of ethene to yield ethanol.

#### OR

An organic compound,  $A(C_2H_6O)$  reacts with sodium to form a compound **B** with the evolution of H<sub>2</sub> and gives a yellow compound **C** when treated with iodine and NaOH. When heated with concentrated H<sub>2</sub>SO<sub>4</sub> at 413 K, it gives a compound  $D(C_4H_{10}O)$ . which on treatment with concentrated HI at 373 K gives **E**. D is also obtained when B is heated with E. Identify A, B, C, D and E. Write equation for the reaction involved.