

# QUIZ

## CHAPTER: ALCOHOLS, ETHERS AND PHENOLS

Time: 1 Hr

Marks: 73

### General Instructions:

1. Questions 1–6 are based on **Comprehension**, questions 7–13 have **Only one correct option** and questions 14–16 may have **More than one correct option** and question 17–18 are **numerical with single digit integer type answer**. And question 19 is **Matrix-Match type answer**.

### Marking Scheme:

- (a) For questions 1–6, **+4** marks will be awarded for each **right** answer and **-2** marks will be deducted for each **wrong** answer.
- (b) For questions 7–13, **+3** marks will be awarded for each **right** answer and **-1** mark will be deducted for each **wrong** answer.
- (c) For questions 14–16, **+4** marks will be awarded for each **right** answer and **-2** marks will be deducted for each **wrong** answer.
- (d) For questions 17–18, **+4** marks will be awarded for each **right** answer and **0** marks will be deducted for each **wrong** answer.
- (e) For questions 19, **+2**, marks will be awarded for each **right** answer and **-1** mark will be deducted for each **wrong** answer.

**COMPREHENSION - I (Only one option correct)**

Vanillin  $C_8H_8O_3$  is isolated from vanilla beans. It gives intense blue colour with neutral  $FeCl_3$  and also gives +ve Tollen's test. It reacts with conc.  $HBr$  to give a compound B. One mole of vanillin gave one mole of  $AgI$  with Zeise's active methoxy estimations.

Compound B on oxidation with Tollen's reagent gave catechol.

Compound B can be prepared from catechol by Gatterman Koch reaction.

- Vanillin contains
 

(A) $-COOH$ group	(B) $-CONH_2$ group
(C) $-CHO$ group	(D) $-Cl$ group
- Vanillin contains
 

(A) one phenolic $OH$ group	(B) one alcoholic $OH$ groups
(C) two phenolic $OH$ groups	(D) three phenolic $OH$ groups

**COMPREHENSION - II (Only one option correct)**

An organic compound containing C, H and O gives following observations:

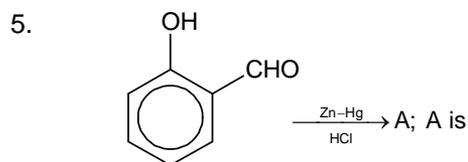
- It exists in two isomeric forms (A) and (B).
  - 0.108 g of one of the isomers on combustion gave 0.308 g of  $CO_2$  and 0.072 g of  $H_2O$ .
  - (A) is insoluble in  $NaOH$  and  $NaHCO_3$  while (B) is soluble in  $NaOH$ .
  - (A) reacts with  $HI$  to give compound (C) and (D). (C) can be separated from (D) by ethanolic  $AgNO_3$  solution and (D) is soluble in  $NaOH$ .
  - (B) readily reacts with bromine water to give compound (E) of molecular formula  $C_7H_5OBr_3$ .
- Compound (B) in the above passage is
 

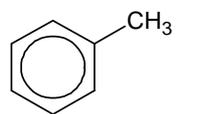
(A) anisole	(B) o-cresol
(C) m-cresol	(D) p-cresol
  - Compound (A) is
 

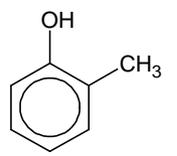
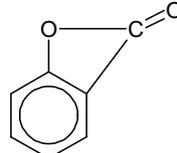
(A) a phenol	(B) a symmetric ether
(C) a mixed ether	(D) a carboxylic acid

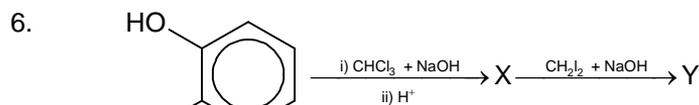
**COMPREHENSION - III (Only one option correct)**

Phenol undergoes reactions, which are normally not shown by alcohols. e.g., when  $PhOH$  is treated with  $Zn$ , it is converted into benzene. Formylation of phenols with chloroform in alkaline solution is known as Reimer Tiemann reaction. In this reaction, it is believed that  $CHCl_3$  and  $NaOH$  react to form carbene which reacts with phenol in its ketonic form to give product.

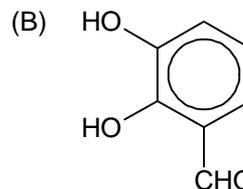
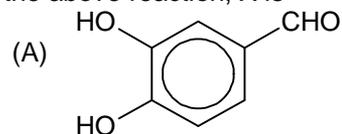


- (A) 
- (C) Both (A) and (B)

- (B) 
- (D) 



In the above reaction, X is



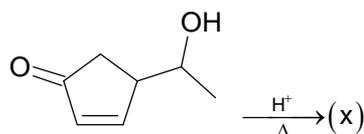
(C) (B) is major, (A) is minor

(D) None of these

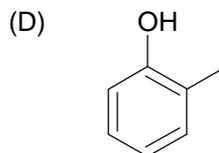
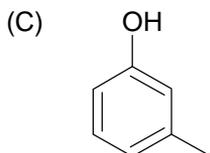
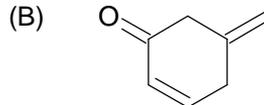
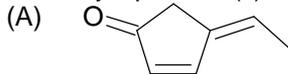
**MULTIPLE CHOICE QUESTIONS (Only one correct option)**

7. Which of the following is a primary alcohol?  
 (A) Butan -2-OL (B) Butan -1-ol  
 (C) Propan -2-OL (D) 2-methylbutan-2-ol
8. Phenol is less acidic than  
 (A) ethanol (B) methanol  
 (C) o-nitrophenol (D) p-cresol
9. Reaction of  with RMgX followed with hydrolysis produces  
 (A) RCHOHR (B) RCH<sub>2</sub>CH<sub>2</sub>OH  
 (C) RCHOHCH<sub>3</sub> (D) RCH = CHO
10. A mixture of benzoic acid and phenol may be separated by treatment with  
 (A) NaHCO<sub>3</sub> (B) NaOH  
 (C) NH<sub>3</sub> solution (D) KOH
11. Which of the following compounds is oxidised to prepare methyl-ethyl ketone?  
 (A) 2-propanol (B) 1-butanol  
 (C) 2-butanol (D) ter-butyl alcohol
12. Butanonitrile may be prepared by heating  
 (A) propyl alcohol with KCN (B) butyl alcohol with KCN  
 (C) butyl chloride with KCN (D) propyl chloride with KCN

13.



The major product (x) is



### MULTIPLE CHOICE QUESTIONS (More than one correct option)

14. How much bromine is needed to produce tribromophenol from one mole of phenol?  
 (A) 3.0 mole (B) 1.5 mol  
 (C) 240 g (D) 480 g
15. Which of the following is/are not phenols?  
 (A) catechol (B) 1-phenyl methanol  
 (C) cyclohexenol (D) cyclobutenol
16. An alcohol, on oxidation, produces a ketone with the same number of carbon atoms. When the ketone is oxidised, it yields acid(s) with a fewer number of carbon atoms. The alcohol could be  
 (A) primary alcohol (B) secondary alcohol  
 (C) tertiary alcohol (D) 2-propanol

### SINGLE INTEGER ANSWER TYPE

17. Number of isomeric ethers with chiral carbon in molecular formula  $\text{C}_5\text{H}_{12}\text{O}$  is.....
18. 0.1 mol of a hydroxyl compound reacts with 62.5 g of  $\text{PCl}_5$  (mol. wt. 208.5). Determine the number of  $\text{—OH}$  groups.

### MATCH-MATRIX TYPE QUESTION

19. Match the following Column I with Column II:

#### Column – I (Reactants)

- (A)  $\text{C}_2\text{H}_5\text{OH} + \text{O} = \text{C} = \text{N} - \text{CH}_3$
- (B)  $\text{C}_2\text{H}_5\text{OH} + \text{O} = \text{C} = \text{CH}_2$
- (C)  $\text{C}_2\text{H}_5\text{OH} + \text{CH}_2\text{N}_2$
- (D)  $\text{C}_2\text{H}_5\text{OH} + \text{COCl}_2$

#### Column – II Product/s (All possible)

- (p)
- (q)  $\text{CH}_3\text{NH}_2$
- (r)
- (s)  $\text{C}_2\text{H}_5\text{OCH}_3$
- (t)

**ANSWERS**

- |                                    |                 |                    |
|------------------------------------|-----------------|--------------------|
| 1. <b>C</b>                        | 2. <b>A</b>     | 3. <b>C</b>        |
| 4. <b>C</b>                        | 5. <b>B</b>     | 6. <b>A</b>        |
| 7. <b>B</b>                        | 8. <b>C</b>     | 9. <b>B</b>        |
| 10. <b>A</b>                       | 11. <b>C</b>    | 12. <b>D</b>       |
| 13. <b>C</b>                       | 14. <b>A, D</b> | 15. <b>B, C, D</b> |
| 16. <b>B, D</b>                    | 17. <b>1</b>    | 18. <b>3</b>       |
| 19. <b>(A) → p, q, t; (B) → r,</b> | <b>(C) → s,</b> | <b>(D) → t</b>     |

**Solution**

18. We know that one mol of  $\text{PCl}_5$  reacts with one mol of  $\text{—OH}$  group.

$$\text{Mole of Alcohol} = 0.1, \text{ mol of } \text{PCl}_5 = \frac{62.5}{208.5} = 0.3$$

$$\text{Hence number of OH group} = \frac{\text{mol of } \text{PCl}_5}{\text{mol of Alcohol}} = \frac{0.3}{0.1} = 3$$