# **UNIT-XI ALCOHOLS, PHENOLS and ETHERS**

# SUBTOPIC - I: PREPARATION AND PROPERTIES OF ALCOHOLS

1.	Number of isomers represented by molecular formula $C_4H_{10}O$ is:				
	1) 3	2) 4	3) 7	4) 10	
2.	Lucas reagent is:				
	1) Anhydrous ZnCl <sub>2</sub>	and conc.HCl	2) anhydrous ZnCl <sub>2</sub> a	nd conc. HNO <sub>3</sub>	
	3) Hydrous ZnCl <sub>2</sub> and	d conc.HNO <sub>3</sub>	4) hydrous ZnCl <sub>2</sub> and	conc. KCl	
3.	$CO + H_2 - \frac{X(Catalyst)}{300^{\circ}C/300 atm}$	$\rightarrow CH_3OH$ , the cataly	rst X is		
	1) Fe	2) Cr <sub>2</sub> O <sub>3</sub> /ZnO	3) V <sub>2</sub> O <sub>5</sub>	4) Al <sub>2</sub> O <sub>3</sub>	
4.	An industrial metho	d for the preparation	of methanol is:		
	1) by reaction CH <sub>4</sub> w	ith steam at 900°C with	h a nickel catalyst		
	2) by reduction of HC	CHO with LiAlH <sub>4</sub>			
	3) by catalytic reduct	ion of CO in presence	of $ZnO - Cr_2O_3$		
	4) by reaction of HCl	HO with NaOH (aq)			
5.	Rectified spirit cont	ains:			
	1) 75% alcohol	2) 95.5% alcohol	3) 56% alcohol	4) 100% alcohol	
6.	What are the produ	cts of the following re	eactions?		
	$C_6H_5OCH_2CH_2OH$ -	$\xrightarrow{Excess \ HBr}_{Heat} \rightarrow ?$			
	1) $C_6H_5OH + BrCH$	<sub>2</sub> CH <sub>2</sub> OH	2) $C_6H_5OH + HOCH_5$	2CH2OH	
	3) $C_6H_5OH + BrCH_2$	CH <sub>2</sub> Br	4) $C_6H_5Br + HOCH_2$	CH <sub>2</sub> OH	
7.	Absolute alcohol car	nnot be obtained by si	mple fractional distil	lation because:	
	1) Pure $C_2H_5OH$ is un	nstable			
4	2) C <sub>2</sub> H <sub>5</sub> OH forms hy	drogen bonding with w	vater		
	3) Boiling point of C	<sub>2</sub> H <sub>5</sub> OH is very close to	that of water		
	4) Constant boiling p	oint azeotropic mixture	e is formed with water		
8.	A compound (X) of	the formula C <sub>3</sub> H <sub>8</sub> O y	ields a compound C <sub>3</sub> I	$H_6O$ on oxidation. To which	
	of the following clas	s of compounds could	(X) belong?		
	1) Aldehyde	2) Secondary alcohol	3) Alkene	4) Tertiary alcohol	
9.	Identify (Z) in the fo	ollowing reaction serie	es:		
	Ethanol $\xrightarrow{PBr_3}(X)$	$\xrightarrow{Alc.KOH} (Y) \xrightarrow{H_2SO_4, roo}_{H_2O_4}$	$\xrightarrow{\text{pom temp}}$ (Z)		
	1) $H_2C = CH_2$	2) CH <sub>3</sub> CH <sub>2</sub> OH	3) CH <sub>3</sub> CH <sub>2</sub> OSO <sub>3</sub> H	4) C <sub>2</sub> H <sub>5</sub> OC <sub>2</sub> H <sub>5</sub>	

10.	Sodium ethoxide has reacted with ethanoyl chloride. The compound that is produced in				
	this reaction is:				
	1) Ethyl ethanoate	2) ethyl chloride	3) diethyl ether	4) 2-butanone	
11.	For a given alcohol	, the order of reactivi	ty with halogen aci	ds is :	
	1) $HI > HBr > HCl$	2) HI > HCl > HBr	3) HCl > HBr > H	I 4) HBr > HI > HCl	
12.	Which of the follow	wing alcohols gives th	e best yield of diall	kyl ether on being heated with	
	a trace of sulphurio	c acid?			
	1) 1-pentanol	2) 2-pentanol	3) cyclopentanol	4) 2-propanol	
13.	$X \xrightarrow{PCl_5} C_2 H_5 Cl$ ,	$Y \xrightarrow{PCl_5} CH_3 COCl$ ,	X and Y are :		
	1) $(C_2H_5)_2O$ and CH	I <sub>3</sub> CO <sub>2</sub> H	2) $C_2H_5I$ and $C_2H_5I$	5CHO	
	3) $C_2H_5OH$ and $C_2H_5OH$	I <sub>5</sub> CHO	4) $C_2H_5OH$ and $C$	H <sub>3</sub> CO <sub>2</sub> H	
14.	Reaction of butano	ne with methyl magne	esium bromide follo	owed by hydrolysis gives:	
	1) 2-methyl-2-butan	ol	2) 2-butanol		
	3) 3-methyl-2-butan	ol	4) 2-pentanol		
15.	Following compour	nds are given			
	i) CH <sub>3</sub> CH <sub>2</sub> OH	ii) CH <sub>3</sub> COCH <sub>3</sub>	iii) (CH <sub>3</sub> ) <sub>2</sub> CHOH	iv) CH <sub>3</sub> OH	
	Which of the above	compound(s), on bein	g warmed with iodin	ne solution and NaOH, will give	
	iodoform?				
	1) (i) and (ii)	2) (i), (iii) & (iv)	3) only (ii)	4) (i), (ii) and (iii)	
16.	Which of the follow	ving is a tertiary alcoh	nol?		
	1) 2-methylpropan-1	l-ol	2) 2-methyl propa	n-2-ol	
	3) 3-methybutan-1-0	ol	4) 3-methybutan-2-ol		
17.	When 3, 3-dimethy	lbutan-2-ol is heated	with conc. H <sub>2</sub> SO <sub>4</sub> tl	ne major product obtained is:	
	1) 2, 3-dimethyl but	-1-ene	2) 3, 3-dimethyl but-1-ene		
	3) 2, 3-dimethyl but	-2-ene			
4	4) cis and trans isom	ners of 2, 3-dimethyl bu	ıt-2- ene		
18.	Methylated spirit is	5:			
	1) 100% alcohol		2) 95.6% a	lcohol + 4.4% water	
U)	3) 90% alcohol + 9%	6 methanol + pyridine	etc. 4) Power a	lcohol	
19.	Which of the follow	ving represents neo-po	entyl alcohol?		
	1) CH <sub>3</sub> CH (CH <sub>3</sub> ) CH	H <sub>2</sub> CH <sub>2</sub> OH	2) CH <sub>3</sub> (CH <sub>2</sub> ) <sub>3</sub> OH	[	
	3) (CH <sub>3</sub> ) <sub>3</sub> C – CH <sub>2</sub> O	Н	4) CH <sub>3</sub> CH <sub>2</sub> CH (O	H) $C_2H_5$	

#### 20. Propan-1-ol and propan -2-ol can be distinguished by:

1) Oxidation with alkaline KMnO<sub>4</sub> followed by reaction with Fehling solution

2) Oxidation with acidic dichromate followed by reaction with Fehling solution

3) Oxidation by heating with copper followed by reaction with Fehling solution

4) Oxidation with conc.H<sub>2</sub>SO<sub>4</sub> followed by reaction with Fehling solution

- 21. How many optically active stereoisomers are possible for butan-2, 3-diol?1) 12) 23) 34) 4
- 22. Which one of the following will most readily be dehydrated in acidic condition?



- 1)  $(CH_2)_{4} \stackrel{+}{N}I$  2)  $CH_3 O CH_3$ 
  - 3)  $(CH_3)_3 \overset{+}{S} I^-$  4)  $(CH_3)_3 C Cl$

23.

24. During dehydration of alcohols to alkenes by heating with conc. H<sub>2</sub>SO<sub>4</sub>, the initiation step is:

1) Elimination of water	2) formation of an ester
/	

3) Formation of carbocation 4) protonation of alcohol molecule

25. Which of the following functional groups, cannot be reduced to alcohol using NaBH<sub>4</sub> in ethanolic solution?

1) R – O – R 2) RCOCl 3) R-COOH 4) R-CHO

26. Acetyl bromide when reacts with excess of CH<sub>3</sub>MgI followed by treatment with saturated solution of NH<sub>4</sub>Cl it gives:

1) Acetone 2) Acetamide 3) 2-methyl-2-propanol 4) acetyl iodide

27. Among the following compounds which can be dehydrated very easily?

1) CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> CH <sub>2</sub> CH <sub>2</sub> OH	2) $CH_3CH_2CH_2 \overset{OH}{C} HCH_3$
3) $CH_3CH_2 - CH_3 - CH_2CH_3$ OH	4) $CH_3CH_2 CH CH_2CH_2OH$

- 28. The best reagent to convert pent-3-en-2-ol into pent-3-en-2-one is:
  - 1) Acidic permanganate2) acidic dichromate

3) Chromic anhydride in glacial acetic acid 4) pyridinium chlorochromate

29.	Acid catalyzed hydration of alkenes except ethene leads to the formation of:				
	1) Primary alcohol		2) Secondary or to	ertiary alcohol	
	3) Mixture of prima	ry and secondary	alcohols		
	4) Mixture of second	dary and tertiary	alcohols		
30.	Among the following	ng the most stab	le compound is:		
	1) Cis-1, 2-cyclohex	anediol	2) trans-1, 2-cycle	ohexanediol	
	3) cis-1, 3-cyclohex	anediol	4) trans-1, 3-cycle	ohexanediol	
31.	A compound 'X' u	ndergoes reduct	tion with LiAlH4 to yield	l 'Y'. When vapours of 'Y' are	
	passed over freshly	reduced copper	r at 300°C, 'X' is formed	. What is 'Y'?	
	1) CH <sub>3</sub> COCH <sub>3</sub>	2) CH <sub>3</sub> CHO	3) CH <sub>3</sub> CH <sub>2</sub> OH	4) $CH_3 - O - CH_3$	
32.	When phenyl mag	nesium bromide	e reacts with tertiary bu	tanol, the product formed will	
	be:				
	1) Phenol		2) Benzene		
	3) Tertiary butyl pho	enyl ether	4) tertiary butyl b	enzene	
33.	Match the List I	with List II and	d pick the correct mate	ching from the codes as given	
	below:				
	List I		List II		
	A) <b>Propane – 1, 2,</b>	3-triol	1) Cyclic ether		
	B) Ethane-1, 2-dio		2) Absolute ethanol + Petrol		
	C) Tetra hydrofur	an	3) Dynamite		
	D) Power alcohol		4) Denaturated alcohol		
	E) Methylated spin	rit	5) Terylene		
	Codes	•			
4	1) A-1, B-2, C-3, D	<b>D</b> -4, E-5	2) A-1, B-3, C-5,	D-4, E-2	
	3) A-3, B-2, C-4, D-	-5, E-1	4) A-3, B-5, C-1,	D-2, E-4	
34.	In the victor Meye	er's test, the col	ours given by 1°, 2° an	d $3^{\circ}$ alcohols are respectively.	
	1) Red, colorless, bl	ue	2) red, blue, colorless		
	3) Colorless, red, blu	ue	4) red, blue, violet		
35.	Phenol can be disti	nguished from t	hanol by the following r	eagents except :	
	1) Sodium	2) NaOH / I <sub>2</sub>	3) neutral FeCl <sub>3</sub>	4) Br <sub>2</sub> / H <sub>2</sub> O	

#### **36.** Phenyl magnesium bromide reacts with methanol to give

1) a mixture of anisole and Mg(OH)Br 2) a mixture of benzene and Mg(OMe)Br

3) a mixture of toluene and Mg(OH)Br 4) a mixture of phenol and Mg(Mg) Br

#### 37. Starch is converted to ethanol by fermentation, the sequence of enzymes used is:

1) Amylase, maltase, zymase	2) diastase, maltase, zymase
3) Amvlase, invertase, zymase	4) amvlase, zvmase, maltase

38. An organic compound 'A' containing C, H and O has a pleasant odour with b.p 78°C. On boiling 'A' with conc. H<sub>2</sub>SO<sub>4</sub>, a colorless gas is produced which decolorizes bromine water and alkaline KMnO<sub>4</sub>. The organic liquid 'A' is :

1)  $C_2H_5Cl$  2)  $C_2H_5COOCH_3$  3)  $C_2H_5OH$  4)  $C_2H_6$ 

**39.** In the following sequence of reactions,

 $CH_{3}CH_{2}OH \xrightarrow{P+I_{2}} (A) \xrightarrow{M_{g}} (B) \xrightarrow{HCHO} (C) \xrightarrow{H_{2}O} (D)$ 

The compound D is:

1) Propanol 2) butanol 3) n-butyl alcohol 4) n-propyl alcohol

40. A fruity smell is obtained by the reaction of ethanol with:

 1) CH<sub>3</sub>COCH<sub>3</sub>
 2) PCl<sub>5</sub>
 3) CH<sub>3</sub>COOH
 4) CH<sub>3</sub>CHO

41. Methyl alcohol when reacted with carbon monoxide using cobalt or rhodium as catalyst, compound 'A' is formed. 'A' on heating with HI in the presence of red phosphorous as catalys 'B' is formed. Identify 'B':

1) CH<sub>3</sub>COOH 2) CH<sub>3</sub>CHO 3) CH<sub>3</sub>CH<sub>2</sub>I 4) CH<sub>3</sub>CH<sub>3</sub>

42. RCH<sub>2</sub>CH<sub>2</sub>OH can be converted to RCH<sub>2</sub>CH<sub>2</sub>COOH by the following sequence of steps: 1) PBr<sub>3</sub>, kCN, H<sub>3</sub>O<sup>+</sup> 2) PBr<sub>3</sub>, kCN, H<sub>2</sub>/p<sup>+</sup> 3) kCN, H<sub>3</sub>O<sup>+</sup> 4) HCN, PBr<sub>3</sub>, H<sub>3</sub>O<sup>+</sup>

#### 43. Which of the following will produce only one product on reduction with LiAlH<sub>4</sub>?

 1) CH<sub>3</sub>COOCH<sub>2</sub>CH<sub>3</sub>
 2) CH<sub>3</sub>CH<sub>2</sub>OCOCH<sub>2</sub>CH<sub>3</sub>

 3) CH<sub>3</sub>CH<sub>2</sub>OCOCH<sub>3</sub>
 4) CH<sub>3</sub>CH<sub>2</sub>OCOCH<sub>2</sub>CH<sub>2</sub>CH<sub>3</sub>

44. A liquid was mixed with ethanol and a drop of concentrated H<sub>2</sub>SO<sub>4</sub> was added. A compound with a fruity smell was formed. The liquid was

 1) CH<sub>3</sub>OH
 2) HCHO
 3) CH<sub>3</sub>COCH<sub>3</sub>
 4) CH<sub>3</sub>COOH

45. The function of ZnCl<sub>2</sub> in Lucas test for alcohols is:

1) to act as an acid catalyst and react with HCl to form  $H_2ZnCl_4$ 

- 2) to act as a base catalyst and react with NaOH to form Na<sub>2</sub>Zn(OH)<sub>4</sub>
- 3) to act as an amphoteric catalyst 4) to act as an neutral catalyst

#### 46. Which of the following is the most acidic alcohol?



#### 51. Aliphatic primary amines on reaction with NaNO<sub>2</sub>/ HCl give:

- 1) Only primary alcohol 2) only secondary alcohol
- 3) Only tertiary alcohol 4) Primary, Secondary and tertiary alcohol

# 52. Which of the following alcohols will dehydrate most rapidly when treated with conc. $H_2SO_4$ ?

1)  $CH_{3} - CH - CH_{3} - CH_{3}$ 3)  $CH_{3} - CH - CH_{3}$   $CH_{3} - CH - CH_{3}$   $CH_{3} - CH - CH_{3} - CH_{3} - CH_{3}$ (1)  $CH_{3} - CH_{3} - CH_{3} - CH_{3} - CH_{3} - CH_{3} - CH_{2} - CH_$ 

# KEY

1) 3	2) 1	3) 2	4) 3	5) 2	6) 3	7) 4	8) 2	9) 2	10) 1
11) 1	12) 1	13) 4	14) 1	15) 4	16) 2	17) 3	18) 3	19) 3	20) 3
21) 2	22) 1	23) 1	24) 4	25) 1	26) 3	27) 3	28) 4	29) 2	30) 4
31) 3	32) 2	33) 4	34) 2	35) 1	36) 2	37) 2	38) 3	39) 4	40) 3
41) 4	42) 1	43) 1	44) 4	45) 1	46) 4	47) 2	48) 1	49) 3	50) 3
51) 4	52) 3		7						

#### **SUBTOPIC - II: PHENOLS**



- 1. The IUPAC name of
  - 1. o-bromo phenol 2. p-bromo phenol
  - 3. 2-bromo phenol 4. 6-bromo phenol

#### 2. Which does not have a carboxyl group ?

- 1. Picric acid 2. Ethanoic acid
- 3. Aspirin 4. Benzoic acid

#### 3. Benzene diazonium chloride on hydrolysis gives

- 1. Benzene 2. Benzyl alcohol
- 3. Phenol 4. Chlorobenzene

 $\xrightarrow{i) O_2}$ 

4. Cumene  $^{ii)H_2O_2H^+}$  (X) and (Y)

#### (X) and (Y) respectively are

1. Toluene, propene

2.toluene, propylchloride

3. Phenol, acetone 4. Phenol, acetaldehyde

#### 5. Which of the following statements is not true?

- 1) When vapours of phenol are passed over Zn dust, benzene is formed
- 2) The phenolic OH group is meta directing group
- 3) The phenolic OH group is ortho and para directing group
- 4) o Nitrophenol has a lower boiling point as compared to that of p nitrophenol

#### 6. When phenol is treated with excess of bromine water, it gives

- 1. m-bromophenol 2. o- and p-bromophenol
- 3. 2, 4-dibromophenol 4. 2, 4, 6-tribromophenol

Phenol <sup>i)CHCl3/NaOH</sup> <sup>i)H<sup>+</sup></sup> Salicyla

7.

#### ol <sup>ii)H<sup>+</sup></sup> Salicyladehyde. This reaction is known as

- 1. Gattermann aldehyde synthesis2. Sandmeyer's reaction
- 3. Perkin's reaction4. Reimer-Tiemann reaction
- 8. Picric acid is a yellow coloured compound. Its chemical name is
  - 1. m-nitrobenzoic acid2. 2, 4, 6-trinitrophenol3. Trinitrotoluene4. trinitroaniline

#### 9. Phenol reacts with bromine in carbon disulphide at low temperature to give

- 1. m-bromophenol2. o- and p-bromophenol
- 3. p-bromophenol 4. 2, 4, 6-tribromophenol

#### **10.** The bromination of phenol in aqueous medium produces

2) 4 - bromophenol
 3) 2, 4, 6 - tribromophenol
 4) a mixture of 2 - and 4 - bromophenols

# 3) 2, 4, 6 - tribromophenol4) a mixture of 2 - and 4 - bromophen

#### 11. Phenol on treating with concentrated H<sub>2</sub>SO<sub>4</sub> at 15–20°C mainly produces

- 1) Phenol -2 sulphonic acid
- 2) Phenol -4 sulphonic acid
- 3) A 50% mixture of ortho and para phenol sulphonic acid
- 4) Phenol 2, 46 trisulphonic acid

#### 12. Phenol on treating with concentrated H<sub>2</sub>SO<sub>4</sub> at 100°C mainly produces

- 1) ortho phenolsulphonic acid
- 2) para phenolsulphonic acid
- 3) A 50% mixture of ortho and para phenolsulphonic acid
- 4) Phenol 2, 4, 6 trisulphonci acid

#### 13. Which one of the following compounds would undergo nitration with greatest ease?

- 1. Benzene2. Phenol3. Nitrobenzene4. Benzoic acid
- 14. In the reaction  $\xrightarrow{\text{NaNO}_2+\text{HCLO}^\circ\text{C}} \mathbf{X} \xrightarrow{\text{H}_2\text{O}, \text{warm}} \mathbf{Y}$ ; **Y** is
  - 1.  $C_6H_5Cl$  2.  $C_6H_6$  3.  $C_6H_5OH$  4.  $C_6H_5CHO$

#### 15. On distilling 2 – hydroxy benzoic acid with Zn dust, it gives

1) Phenol2) Benzoic acid 3) Benzaldehyde4) A polymeric compound

#### 16. Phenol is

- 1. a base weaker than ammonia 2. an acid stronger than carbonic acid
- 3. an acid weaker than carbonic acid 4. a neutral compound

#### 17. Phenols is less acidic than

1. p-nitrophenol2. Ethanol3. Cresol4. Benzyl alcohol

#### 18. The most acidic compound among the following is

1 phenol 2. Ethanol 3. 3,5-dinitrophenol 4. 4-methoxy phenol

#### **19.** Which of the following is most volatile ?

1. p-nitrophenol 2. m-nitrophenol 3. o-nitro phenol 4. All of these

**20.**  $C_6H_5OH + CHCl_3 + NaOH \rightarrow$  salicylaldehyde

#### The electrophile involved in the above reaction is.

1. dichloromethyl cation $(CHCl_2)$	2. dichlorocarbene <sup>(:CCl<sub>2</sub>)</sup>
3. trichloromethyl anion $(\overline{CCl}_3)$	4. formyl cation $(CHO)$

#### 21. The lowest $pK_a$ is that of

1) Ethanol	2) propanol	3) propane	4) phenol
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#### **22.** Assertion (A): Phenols are more acidic than aliphatic alcohols.

#### Reason (R): Phenoxides are stabilized by resonance.

- 1) Both A & R are correct, R is the correct explanation of A.
- 2) Both A & R are correct, R is not the correct explanation of A
- 3) A is correct but R is incorrect
- 4) A is incorrect but R is correct

#### 23. Which of the following order is true regarding the acidic nature of phenol?

- 1) Phenol > o Cresol > o Nitrophenol
- 2) Phenol > o Cresol < o Nitrophenol
- 3) Phenol < o Cresol < o Nitrophenol
- 4) Phenol < o Cresol > o Nitrophenol

#### 24. In the following compounds

I. Phenol II. 4-methyl phenol	III. 3-nitrophenol	IV. 4-nitrophenol
The order of acidity is		

 $1. III > IV > I > II \qquad 2. I > IV > III > II \qquad 3. II > I > III > IV \qquad 4. IV > III > I > II$ 

#### 25. Assertion (A): p-Nitrophenol is stronger acid than o-nitrophenol.

Reason (R): Intermolecular hydrogen bonding makes ortho-isomer weaker acid than Paraisomer.

- 1) Both A & R are correct, R is the correct explanation of A.
- 2) Both A & R are correct, R is not the correct explanation of A
- 3) A is correct but R is incorrect
- 4) A is incorrect but R is correct

#### 26. In the Libermann's nitroso reaction, sequential changes in the colour of phenol occurs as

- 1) Deep blue  $\rightarrow$  red  $\rightarrow$  deep blue 2) Red  $\rightarrow$  Deep Blue  $\rightarrow$  Green
- 3) Red  $\rightarrow$  Green  $\rightarrow$ White 4) White  $\rightarrow$ Red  $\rightarrow$ Green

#### 27. Which of the following is most acidic?

1) Phenol2) Benzyl alcohol

#### KEY

- 1) 3 2) 1 3) 3 4) 3 5) 2 6) 4 7) 4 8) 2 9) 2 10) 3
- 11) 2 12) 2 13) 2 14) 2 15) 2 16) 3 17) 1 18) 3 19) 3 20) 2
- 21) 4 22) 1 23) 2 24) 4 25) 1 26) 1 27) 3

#### **SUBTOPIC - III: ETHERS**

1.	The following represents ether						
	1) (RCO) <sub>2</sub> O	2) RCOOR	3) RCOR	4) ROR			
2.	Which of the follow	ing is simple ether?					
	1) CH <sub>3</sub> OCH <sub>3</sub>	2) CH <sub>3</sub> OC <sub>2</sub> H <sub>5</sub>	3) CH <sub>3</sub> CH <sub>2</sub> C	OCH (CH <sub>3</sub> ) <sub>2</sub> 4) $C_2H_5OC_3H_7$			
3.	The number of met	americ ethers possible	with the form	ula C4H <sub>10</sub> O is			
	1) 4	2) 3	3) 2	4) 5			
4.	Excess of C <sub>2</sub> H <sub>5</sub> OH	at 140 <sup>0</sup> C reacts with	conc. H <sub>2</sub> SO <sub>4</sub> , a	and then compound formed is			
	1) Diethyl ether	2) Diethyl sulphate	3) Ethylene	4) Ethylene hydrogen sulphate			
5.	What is Y in the following reactions?						
	$C_2H_5I + NaOC_2H_5 \rightarrow X + NaI$						
	Functional isomer of 'X' is						
	1) C <sub>2</sub> H <sub>5</sub> I	2) C <sub>2</sub> H <sub>5</sub> OH 3) C <sub>2</sub>	2H4	4) C <sub>2</sub> H <sub>5</sub> OC <sub>2</sub> H <sub>5</sub>			

<sup>3)</sup> m – Chlorophenol 4) Cyclohexanol

6.	Phenol on heating with NaOH followed by reaction with alkyl halide gives						
	1) Acetone	2) Ether	3) Ethanol	4) Acetic acid			
7.	Ethers are obtained	by					
	1) Reaction of alkyl halide with dry ZnO						
	2) Reaction of alkyl halide with moist ZnO						
	3) Reaction of alkyl h	alide with dry A	g20				
	4) Reaction of alkyl h	alide with moist	Ag <sub>2</sub> O				
8.	Sodium phenoxide r	eacts with meth	yl iodide and gives an	nisole. The reaction is known as			
	1) Kolbe's reaction		2) Williamson's react	ion			
	3) Friedel Crafts reac	tion	4) Riemer - Tiemann	reaction			
9.	Anisole by reacting	with methyl chl	orideand anhydrous A	AIC13 will produce			
	1) P- methyloanisole		<ul><li>2) O- methylanisole</li><li>4) m- methylanisole</li></ul>				
	3) Both 1 and 2						
10.	With boiling water of	or steam diethyl	lether gives				
	1) (C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> SO <sub>4</sub>	2) C <sub>2</sub> H <sub>5</sub> OH	3) $CH_2 = CH_2$	4) $C_2H_5OH + C_2H_5HSO_4$			
11.	The correct stateme	nt regarding ox	ygen atom of ether is				
	1) Chemically less rea	active	2) Acts as alewis base	2			
	3) Undergoes sp <sup>3</sup> hyb	oridisation	4) all the above				
12.	Heating of methyl p	henyl ether with	n HI gives				
	1. Methanol + iodobe	nzene	2. Methyl iodide + iod	dobenzene			
	3. Methyl alcohol + b	enzyl alcohol	4. Methyl iodide + ph	enol			
13.	$C_2H_5 - O - C_2H_5 +$	$\mathbf{CO} \xrightarrow{BF_3/500^0 C} \mathbf{X}$	K, here "X" is				
	1) <i>СН</i> <sub>3</sub> СООН	2) $CH_3COOC_2H_5$	3) <i>CH</i> <sub>3</sub> <i>CH</i> <sub>2</sub> <i>COOC</i> <sub>2</sub> <i>H</i> <sub>5</sub> 4)	$C_3H_7COOC_2H_5$			
14.	What is X in the foll	owing reaction	$(C_2H_5)_2O + (CH_3CO)_2O - \frac{Z}{ar}$	ZnCl <sub>2</sub> X			
	1) CH <sub>3</sub> COC <sub>2</sub> H <sub>5</sub>	2) ethyl ethanoa	ate				
A							

3) Methyl propanoate 4) diethyl ketone

15.	In which one of the following reactions, primary alkyl halide is not formed as one of the						
	product						
	1) $(CH_3)_2 O + HI \rightarrow$				$2) CH_3OCH(CH_3)_2 + HI$	$\rightarrow$	
	3) $CH_3OCH_2CH_3 + HI \rightarrow$				4) $CH_3OC(CH_3)_3 + HI \rightarrow$		
16.	When die	When diethyl ether is treated with Cl <sub>2</sub> in sunlight, the product is					
	1) CH <sub>3</sub> CHCl O CH <sub>2</sub> CH <sub>3</sub>				2) CH <sub>3</sub> CHCl O CH	CI CH <sub>3</sub>	
	3) CCl <sub>3</sub> CCl <sub>2</sub> O CCl <sub>2</sub> CCl <sub>3</sub>				4) CH <sub>3</sub> CHCl O CCl	H <sub>2</sub> CH <sub>3</sub>	
17.	Natalite is						
	1) Ether	+ petrol	2) alcoh	ol + petrol	3) alcohol + ether	4) alcohol + KI + $I_2$	
18. Which of the following is used as freezing mixture?					g mixture?		
	1) Mixtu	ure of ether	and liquid	$CO_2$	2) mixture of ether a	nd ethyl alcohol	
	3) Mixture of ether and dry ice				4) mixture of ethyl alcohol and dry ice		
19.	9. The IUPAC name of CH <sub>3</sub> OCH (CH <sub>3</sub> ) <sub>2</sub> is						
	1) 1 – metholxy 1 – methyl ethane				2) 3 – methoxy propane		
	3) Methyl isopropyl ether				4) 2 – methoxy propane		
20.	Match the following						
	List - I A) C <sub>2</sub> H <sub>5</sub> OC <sub>2</sub> H <sub>5</sub>		List - II				
			<ol> <li>Anisole</li> <li>Simple ether</li> </ol>				
	<ul> <li>B) C<sub>2</sub>H<sub>5</sub> O CH<sub>3</sub></li> <li>C) C<sub>2</sub>H<sub>5</sub> O C<sub>2</sub>H<sub>5</sub> + dry ice</li> <li>D) C<sub>2</sub>H<sub>5</sub>OC<sub>2</sub>H<sub>5</sub> + C<sub>2</sub>H<sub>5</sub>OH</li> </ul>						
				3) Natalite			
				4) Mixed ether			
				5) Refrigerant			
	The corre	ect match i	S				
	Α	В	С	D			
	1. 2	1	5	3			
8	2. 2	4	5	3			
	3. 2	4	5	1			
	4. 1	2	3	4			

21.	Match the following						
	List - I	List - II					
	A) Enthrane	$1) \xrightarrow{CCH_3}{CCH_3}$					
	B) Vanillin	2) $\stackrel{\text{OH}}{\longrightarrow} \text{OCH}_3$					
	C) Isoflurane	3) CHO					
	D) AnIthole	4) CI CI F 					
	The correct match is						
	A B C	D					
	1.2 3 1	5					
	2.4 5 3	2					
	3. 4 5 1	2					
	4. 1 4 5	3					
22.	The product C in the following sequence of reaction is						
	$C_{2}H_{5}Br \xrightarrow{\text{NaOH(aq)}} A \xrightarrow{\text{Na}} B \xrightarrow{\text{CH}_{3}I} C$						
	1) Butane 2) Ethane	3) Methyl ethyl ether 4)Propane					
23.	Assertion (A): Ethyl alcohol reacts with alumina at and gives di ethyl ether.						
	Reason (R): Ethyl alcohol undergoes dehydration.						
	1) Both A and R are true and R is the correct explanation to A						
	2) Both A and R are true and R is not the correct explanation to A						
	3) A is true but R is false						
	4) A is false but R is true						

## 24. Ethylene reacts with HBr forming 'X' which on reaction with moist Ag<sub>2</sub>O gives 'Y'. When

## 'Y' is heated with alumina at 350<sup>0</sup>C compound Z is formed. Then X and Z are

1) Bromo ethane, ethanol 2) Ethanol, ethoxy ethane 3) Ethyl bromide, diethyl ether 4)Bromo ethane, Ethene 25.  $C_2H_5 - O - C_2H_5 + CO \xrightarrow{BF_3/500^\circ C} X$ , The functional isomer of 'X' is 4)  $C_3H_7COOC_2H_5$ 1)  $CH_3COOH$ 2)  $CH_3CH_2COOC_2H_5$ 3) C<sub>4</sub>H<sub>9</sub>COOH  $2CH_3CH_2OH \xrightarrow{140^0C} \mathbf{R}$ 26.  $\mathbf{B} + \mathbf{CO} \xrightarrow{BF_3/500^0 C} \mathbf{C}$ The functional groups present in B and C are respectively 1) Ester, ether 2) Ether, ester 3) Alcohol, ester 4) Ester, alcohol Which one of the following is the best method for making isopropyl methyl ether? 27. 2)  $CH_3I + (CH_3)_2 CHO^- \rightarrow$ 1)  $CH_{3}I + (CH_{3})_{2}CHOH \rightarrow$ 4)  $(CH_3)_2 CHCI + CH_3 OH \rightarrow$ 3)  $(CH_3)_2 CHI + CH_3 O^- \rightarrow$ **KEY** 5) 2 1) 2 2) 1 3) 2 4) 1 6) 2 7) 3 8) 2 9) 3 10) 2 11) 4 12) 4 13) 3 14) 2 15) 4 16) 3 17) 3 18) 3 19) 4 20) 2 21) 3 22) 3 23) 1 24) 4 25) 3 26) 2 27) 4