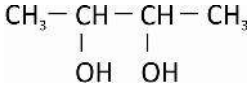
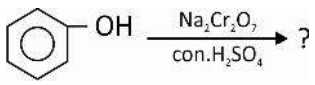
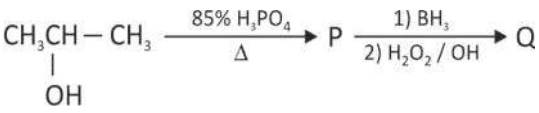
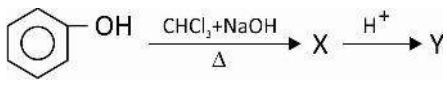
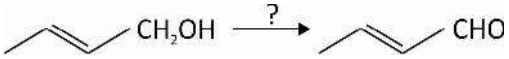
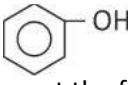
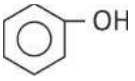
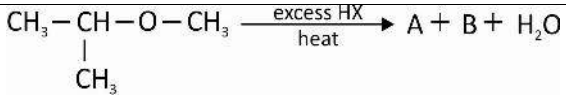
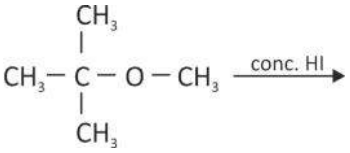
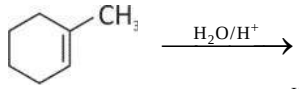
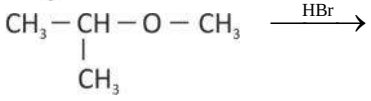
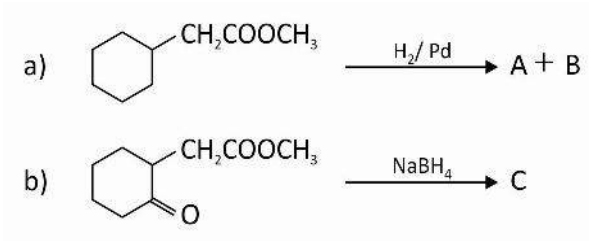
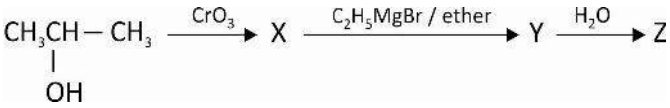
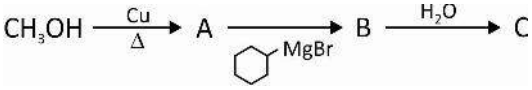
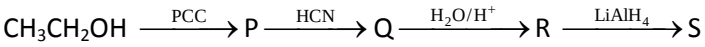
UNIT-11: ALCOHOLS, PHENOLS AND ETHERS

One mark questions:	
1. Write the IUPAC name of 	K
2. Write the structure of 2, 3 - diethyl phenol.	K
3. Which of the following is allyl alcohol? CH_2 = CH–CH_2–CH_2OH, CH_2=CH–OH, HO–CH_2–CH=CH_2.	U
4. C-O-H bond angle in alcohols is less than 109°28'. Give reason.	U
5. Identify 'X' : $CH_3COOH \xrightarrow[2)\ H_2O]{1)\ LiAlH_4} X$	U
6. Write equation for the conversion of ethanal into propan-2-ol using a Grignard reagent.	K
7. Ethanol and methoxymethane have same molar mass. But ethanol has higher B.P than methoxymethane. Give reason.	U
8. Give a reaction to show the acidic nature of alcohols.	K
9. Arrange the following in the increasing order of acid strength: CH_3CH_2OH, $CH_3CH(OH)CH_3$, $(CH_3)_3C$–OH.	U
10. What type of alcohols do not give turbidity at room temperature when treated with Lucas reagent?	K
11. Dehydration of 2° or 3° alcohols fails to give ethers. Why?	U
12. Name a metal which is used as catalyst for dehydrogenation of alcohols.	K
13. Write the IUPAC name of the organic product obtained if t-butyl alcohol is heated with copper at 573 K.	U
14. Mention the reagent used to prepare benzene from phenol.	K
15. Which alcohol is known as 'wood spirit'?	K
16. What is denaturation of alcohol?	K
17. Consumption which alcohol causes blindness?	K
18. Name the alcohol obtained by destructive distillation of wood.	K
19. Name the enzyme involved in the following reaction: $C_6H_{12}O_6 \longrightarrow 2C_2H_5OH + 2CO_2$.	K
20. Name the product obtained in the following reaction: 	K
21. Write the general equation for Williamson synthesis.	K

22. What is P in the following reaction? $C_6H_5–O–R + P \xrightarrow{\Delta} C_6H_5OH + R–X$.	K
Two mark questions:	
1. O–H bond length in phenol is slightly less than the same in methanol. Give two reasons.	U
2. Give an example for the preparation of 3° alcohol from a Grignard reagent.	A
3. Write the equation for the preparation of phenol from cumene.	K
4. Complete the following equations: a) $HCHO + R\text{-}MgX \xrightarrow{ether} \_\_\_\_\_ \xrightarrow{H_2O} \_\_\_\_\_$ b)  $\xrightarrow{oleum} \_\_\_\_\_ \xrightarrow[2)\ H^+]{1)\ NaOH} \_\_\_\_\_$	U
5. Write the structures of P and Q 	A
6. How is aniline converted into phenol? Write the equation.	K
7. Write the equations for the conversion of chlorobenzene to phenol.	K
8. How does b.p of alcohols change a) With increase in number of carbon atoms b) With increase in branching	U
9. i) Propanol has a higher boiling point than butane even though they have nearly the same molar mass. Give reason. ii) o-nitrophenol is steam volatile but not p-nitrophenol	U
10. a) Alkoxide ion is stronger base than hydroxide ion, why? b) Phenoxide ion is more stable then alkoxide ion. Give reason.	U
11. Arrange 3°, 2°, 1° alcohols in a) decreasing order of acid strength b) relative order of ease of dehydration	U
12. Explain Kolbe's reaction.	K
13. Write the structure of the final product and name the reaction: 	U
14. What is the effect of EWG on acid strength of phenol?	U
15. Give reasons: Phenol is a stronger acid than an alcohol.	U
16. Cresols are less acidic than phenol. Why?	U
17. i) What is the composition of Lucas reagent? ii) What happens if a 3° alcohol is treated with Lucas reagent?	K

18. Name a reagent for the following conversion. $KMnO_4$ cannot used for this, explain 	U
19. How is aspirin prepared from salicylic acid?	K
20. What is the role of pyridine in the following reaction? Identify the product obtained. $ArOH + CH_3COCl \xrightarrow{pyridine} \_\_\_\_\_ + HCl$	K
21. Give reasons for the following: i) Fermentation of glucose takes place under anaerobic conditions. ii) Electrophilic substitution of phenol and anisole takes place at ortho and para positions.	U
22. Give the structures of the major products in the following: a) $CH_3–CH = CH_2 + H_2O \xrightarrow{H^+}$ b)  $+ Br_2 \xrightarrow{CS_2}$	K
23. Bring out the following conversions: a) phenol into sodium phenoxide b) anisole into 4-methoxy acetophenone	K
24. Draw the structure of the product in the following reactions. a) Phenol treated with bromine water b) 2-propanol treated with PCC or CrO_3 in anhydrous medium	K
25. How will you convert phenol into picric acid?	K
26. Identify the major product in i.  $\xrightarrow{dil.HNO_3}$ ii. $CH_3CH_2OH \xrightarrow[413K]{conc.H_2SO_4}$	K
27. How is methanol manufactured commercially?	K
28. Write the equations along with enzymes involved in the manufacture of ethanol from molasses.	K
29. Explain Williamson synthesis with an example.	K
30. How is anisole prepared by Williamson synthesis?	K
31. Write the IUPAC names of the products in a) $CH_3–I + NaOC_2H_5 \longrightarrow$ b) $CH_3CH_2OH + CH_3COOH \xrightarrow{conc.H_2SO_4}$	K
32. Complete the equation :	

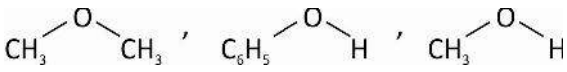
	A
What is the order of reactivity of HBr, HI and HCl in this reaction?	
33. Complete the following equation. Mention whether the reaction is S_N1 or S_N2. 	A
34. Write structures of the products formed in the given reactions. a)  b) 	A
35. Which of the following is better method for the preparation of t-butyl ethyl ether? Give reason. 	A K
36. How does anisole react with a mixture of conc. HNO_3 and conc. H_2SO_4?	
37. Write equations for a) Friedel-Craft's methylation of anisole. b) Bromination of anisole in acetic acid medium	K
Three mark questions:	
1. Give the mechanism for acid catalysed dehydration of ethanol to ethene.	K
2. Write equations for the mechanism of acid dehydration of ethanol to diethyl ether.	K
3. Write the structures of A, B and C  Hint: A, B are primary alcohols and C is secondary alcohol.	A
4. $CH_3CH = CH_2 \xrightarrow{BH_3} P \xrightarrow{H_2O_2/^-OH} Q$. Identify P and Q. Is the final product obtained as per Markownikov's rule or opposite to it?	A
5. $CH_3–O–CH_2CH_3 \xrightarrow{H^+} ? \xrightarrow{I^-}$ [Intermediate] $\longrightarrow$ final products	

	Write the structures of protonated product, intermediate and its final products.	U
Five mark questions:		
1.	Write the structures of any two alcohol and three ethers with the formula $C_4H_{10}O$.	U
2.	a) Give the structures of X, Y, Z and write the IUPAC name of Z.  	
	b) Name the alcohol that is used as solvent in varnishes.	A
3.	a) Identify A, B, C. Write the IUPAC name of C.  	
	b) Carbolic acid is usually called _____	A
4.	a) Identify the missing compounds, P, Q, R, S:  	
	b) What is the IUPAC name of $CH_3–O–CH_2–CH_2–OCH_3$?	A
5.	Write all the possible structures which are aromatic compounds with the formula C_7H_8O.	A
6.	a) Match the following acids with their pk_a values:	

A	B
a) p-cresol	i) 15.9
b) phenol	ii) 10.2
c) p-nitrophenol	iii) 9.98
d) ethanol	iv) 7.1

(Hint: Greater the pK_a value, weaker is the acid)

b) Arrange the following in the increasing order of bond angle around oxygen atom.



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