

India's Number 1 Education App



CHEMISTRY

BOOKS - BITSAT GUIDE

ALCOHOLS, PHENOLS AND ETHERS

Practice Exercise

1. Appropriate test to make distinction between

methanol and methyl carbinol is

A. test with acetic acid

B. test with salicyclic acid and conc. H_2SO_4

C. test with sodium

D. None of the above

Answer: B

Watch Video Solution

2. Which of the following alcohols is unable to turn orange colour of chromic acid green ?

A. Primary alcohol

B. Secondary alcohol

C. Tertiary alcohol

D. Allyl alcohol

Answer: C

Watch Video Solution

3. Match List I with List II and choose the correct

code

List I	List II
A. $CH_3CH_2OH \xrightarrow{(0)} Product-1$	1. H ₂ C — CH ₂ O (Functional isomer)
B. $CH_3COCH_2CH_3 \xrightarrow{\text{Reduction}}$ Product-2	2. Optical isomer
C. $CH_3CONH_2 \xrightarrow{Na/EIOH}$ Product-3	3. Ethanol
D. $CH_2O \xrightarrow{(I) CH_3MgI}{H_2O}$ Product-4	4. Primary amine



Answer: A



4. Place the following alcohols in decreasing order of rate of dehydration with H_2SO_4 .

 $CH_{3}CH_{2}CH(OH)CH_{2}CH_{2}CH_{3}_{(A)}$ $(CH_{3})_{2}C(OH)CH_{2}CH_{2}CH_{3}_{(B)}$ $(CH_{3})_{2}C(OH)CH(CH_{3})_{2}_{(C)}$ $CH_{3}CH_{2}CH(OH)CH(CH_{3})_{2}_{(D)}$ $CH_{3}CH_{2}CH_{2}CH_{2}CH_{2}CH_{2}CH_{2}OH_{2}CH_{2}OH_{2}CH_{2}CH_{2}OH_{2}CH_{2}OH_{2}OH_{2}CH_{2}OH$

A. III > II > IV > VI

 $\mathsf{B}.\,III > II > IV > I > V$

 $\mathsf{C}.\,III>II>I>V>V$

$\mathsf{D}.\,III > II > I > V > IV$

Answer: B



5. A compound with molcular formula $C_4H_{10}O_3$. is converted by the action of acetyl chloride to a compound of molecular mass 190. The original compound $(C_4H_{10}O_3)$ has

A. one-OH group

B. two-OH groups

C. three-OH groups

D. four-OH groups

Answer: B

Watch Video Solution

6. Arrange the following compounds in increasing order of boiling point :

Propan-1-ol, butan-1-ol, butan-2-ol, pentan-1-ol

A. Propan-1-ol < butan-2-ol < butan-1-ol < pentan-1-ol B. Propan-1-ol < butan-1-ol < butan-2-ol < pentan-1-ol C. Pentan-1-ol < butan-2-ol < butan-1-ol < propan-1-ol D. Pentan-1-ol < butan-1-ol < butan-2-ol < propan-1-ol

Answer: A



7. An ancohol A when heated with copper gives a product B not having oxygen atom. B on ozonolysis gives two isomeric products C and D.C on oxidation give a monobasic acid E, silver salt of which contain 59.6 % Ag. The structure of A is

$$egin{array}{ccccc} CH_3 - CH - CH - CH_2 - CH_3 \ A. & | & | \ CH_3 & OH \ OH \ & | \ B. \ CH_3 - C - CH_2 - CH_2 - CH_2 - CH_3 \ & | \ CH_3 \end{array}$$

$$CH_3 - CH - CH_2 - CH_2 - CH_2OH$$

C. $|$
 CH_3
D. $CH_3 - CH - CH_2 - O - CH_2 - CH_2OH$

 CH_3

Answer: B



8. Rate of dehydration of alcohols follows the order

A.
$$2^\circ\,>1^\circ\,>CH_3OH>3^\circ$$

 $\texttt{B.}\ 3^\circ\ > 2^\circ\ > 1^\circ\ > CH_3OH$

$\mathsf{C.}\,2^\circ\,>3^\circ\,>1^\circ\,>CH_3OH$

D. $CH_3OH > 1^\circ > 2^\circ > 3^\circ$

Answer: B

Watch Video Solution

9. Consider the following reaction,

 $A \xrightarrow[H_2SO_4]{K_2Cr_2O_7} ext{Acetone} \xrightarrow[Oxidation]{Oxidation} ext{Acetic acid}$

Identify A in the above reaction.

A. 1-propanol

B. 2-propanol

C. 2-butanol

D. Ethanol

Answer: B

Watch Video Solution

10. The alcohols, 1-propanol and 2-propanol are distinguised by

A. oxidation with conc. H_2SO_4 followed by

reaction with Fehling's solution

B. oxidation with alk. $KMnO_4$ followed by

reaction with Fehling's solution

C. reaction with iodine and aq. NaOH

D. reaction with Grignard reagent

Answer: C



11. The order for the acidic strength of $1^{\circ}, 2^{\circ}, 3^{\circ}$ alcohols, H_2O and $RC \equiv CH$ is

A. $R\equiv CH>3^\circ>2^\circ>1^\circ>H_2O$

 $\mathsf{B}.\,1^\circ\,>2^\circ\,>3^\circ\,>H_2O>RC\equiv CH$

C. $H_3O>1^\circ>2^\circ>3^\circ>RC\equiv CH$

D. $3^\circ > 2^\circ > 1^\circ > H_2O > RC \equiv CH$

Answer: C

12. Identify the reaction conditions for the following reaction to occur $CH_{3}CH_{2}OH \longrightarrow C_{2}H_{5}OC_{2}H_{5}$ A. $I
ightarrow H_2 SO_4, 443 K \quad II
ightarrow H_2 SO_4, 443 K$ Β. $I
ightarrow H_2SO_4, 413K \quad II
ightarrow H_2SO_4, 413K$

 $I
ightarrow H_2SO_4, 443K \quad II
ightarrow H_2SO_4, 413K$

C.

$I ightarrow H_2 SO_4, 413 K \hspace{0.5cm} II ightarrow H_2 SO_4, 443 K$

Answer: C



13. Which of the following reagents cannot be used to distinguish between phenol and benzyl alcohol ?

A. $Br_2 \,/\, CCl_4$

B. NaOH

C. $NAHCO_3$

D. $FeCl_3$ (neutral)

Answer: C

Watch Video Solution

14. For the reaction, Phenol \rightarrow Cyclohexanol, the s:p ratio of the carbon attached to -OHgroup change from....to....

A.
$$\left(\frac{1}{3}:\frac{2}{3}\right)\left(\frac{1}{4}:\frac{3}{4}\right)$$

B. $\left(\frac{1}{3}:\frac{2}{3}\right)\left(\frac{1}{2}:\frac{1}{2}\right)$

$$\mathsf{C}.\left(\frac{1}{2}:\frac{1}{2}\right)\left(\frac{1}{3}:\frac{2}{3}\right)$$

D. None of these

Answer: A



15. In which of the following reactions, phenol is

not obtained ?







Answer: B



16. Sodium pheoxide reacts with CO_2 at 400K

and 4-7 atm pressure to give

A. catechol

B. salicylaldehyde

C. sodium salicytate

D. benzoic acid

Answer: C

Watch Video Solution

17. Phenol
$$\xrightarrow{(i) NaOH} A \xrightarrow{H^+ / H_2O} B \xrightarrow{Ac_2O} C$$
 in

this reaction the end product C is

A. salicylaldehyde

B. salicylic acid

C. phenyl acetate

D. aspirin

Answer: D



18. When phenol is heated with $CHCl_3$ and alcoholic KOH, salicylaldehyde is produce. This

reaction is known as

A. Reimer-Tiemann reaction

B. Claisen reaction

C. Cannizzaro reaction

D. Hell-Volhard-Zelinsky reaction

Answer: A



19. Identify Y + Z in the following reaction







Answer: C



20. Consider the following reaction,







The electrophile involved in the above reaction

is

- A. dichloromethyl cation, $\overset{+}{C}HCl_2$
- B. formyl cation, $\overset{+}{C}HO$
- C. trichloromethyl anion, $\overline{C}Cl_3$
- D. dichlorocarbene, : CCl_2

Answer: D



21. Consider the following compounds



Among the compounds A and B, the vapour pressure of B at a particular temperature is

A. higher than that of A

B. lower than that of A

C. same as that of A

D. None of the above

Answer: A



22. Consider the following reaction,

$$\bigcirc - CH = CHCH_3 \xrightarrow{(i) Hg (OAc)_2/THF-H_2O}{(ii) NaBH_2}$$

The major product formed in the above reaction

is



Answer: C



23. Which is/are the correct method(s) to synthesis phenol?

A.
$$(\bigcirc^{\text{CI}} + \text{NaOH} \bigcirc^{\text{CI} \times n} \bigcirc^{\text{CI}} \bigcirc^{\text{CI} \times n} \bigcirc^{\text{High}} \odot^{\text{High}} \odot$$

$$\mathsf{B.} \xrightarrow{\circ} \bigcirc \xrightarrow{\mathsf{Orem}} \bigcirc \xrightarrow{\mathsf{Orem}} \bigoplus \xrightarrow{\mathsf{Orem}} \bigoplus \xrightarrow{\mathsf{Orem}} \bigoplus$$



D. All of the above

Answer: D



Select the product(s) formed in the above

reaction,





D. Both (a) and (c)

Answer: D



What will be the product formed in the above reaction ?









Answer: B





In the given reaction, the product is





Answer: D





coloured complex

The formula of the complex formed in the above

reaction, is

A.
$$\left[Fe(OC_{6}H_{5})_{3}
ight]^{3-}$$

B. $\left[Fe(OC_{6}H_{5})_{3}
ight]^{3+}$

 $\mathsf{C.}\left[Fe(OC_{6}H_{5})_{6}\right]^{3-}$

D.
$$\left[Fe(OC_{6}H_{5})_{6}
ight]^{3+}$$

Answer: C



28. The main product of the following reaction is

 $C_6H_5CH_2(OH)CH(CH_3)_2 \xrightarrow{Conc.H_2SO_4}$?







D.
$$d = \frac{H_{5}C_{6}CH_{2}CH_{2}}{H_{3}C} = CH_{2}$$

Answer: C



29. Glycerol on treatment with excess HI gives

- A. 1,2,3-triiodopropane
- B. 1,3-diiodopropane
- C. 2-iodopropane
- D. 3-iodopropane

Answer: C



30. Etherates are

A. ethers

B. solution in ethers

C. complexes of ethers with Lewis acid

D. complexes of ethers with Lewis base

Answer: C



A. phenol and benzoic acid in the presence of NaOH B. phenol and benzoyl chloride in the presence of pyridine C. phenol and benzoyl chloride in the presence of $ZnCl_2$ D. phenol and benzaldehyde in the presence

of palladium

Answer: B



32. Consider the following reaction,



The products formed in the above reaction are

Answer: A



33. Anisole on reaction with HI forms

A. benzene and methyl iodide

B. phenol and methanol

C. iodobenzene and methanol

D. phenol and methyl iodide

Answer: D

34. The reaction of \searrow with $H_2O/R - MgX$

produces

A. RCHOHR

B. $RCHOHCH_3$

 $\mathsf{C.}\,R_2CHCH_2OH$

D. RCH_2CH_2OH

Answer: D

35. Assertion (A) The cleavage of C - O bond in ethers takes place under drastic condition with excess hydrogen halides Reason (R) Ethers are the most reactive among

all the functional groups.

A. Both A and R are correct and R is the

correct explanation of A

B. Both A and R are correct but R is not the

correct explanation of A

C. A is correct but R is incorrect

D. R is correct but A is incorrect



In the above reaction, the produces are







D.
$$d. \qquad H + ROX$$

Answer: A



Bitsat Archives

1. What will be the product of the following reaction ? CH_3 $H_3C-C-Br+Na-O-CH_3
ightarrow$ CH_3 $CH_3 - C = CH_2$ A. CH_3 CH_3 B. $CH_3 - O - C - CH_3$ CH_3 $C. CH_3 - CH_2 - CH_2 - CH_3$

 $CH_3 - CH - CH_3$ D. CH_3

Answer: A



2. Identify the correct prouct formed during the

following reaction :









Answer: D



3. When 2-methyl propan-2-ol is treated with a mixture of conc. HCl and $ZnCl_2$, turbidity

appears immediately due to the formation of

A. 2-methyl propane

B. 2-methyl propene

C. 2-methyl-2-chloropropane

D. 2-chlorobutane

Answer: C



4. What will be the correct relation between products when 2-methyl cyclohexene is treated

with (i) B_2H_6 in the presence of H_2O_2/OH^-

and (ii) H_2O/H_2SO_4 ?

(Also consider stereochemistry of product)

A. They are metamers

B. They are tautomers

C. They are functional isomers

D. They are positional isomers

Answer: D

5. The following reaction is known as



A. Friedel-Crafts reaction

- B. Kolbe reaction
- C. Reimer-Tiemann reaction
- D. Witting reaction

Answer: B



The reaction is called

A. Reimer-Tiemann reaction

B. Liebermann's nitroso reaction

C. Dakin reaction

D. Lederer-Manasse reaction

Answer: C

7. 3-methyl-2-butanol on treatment with HCl gives (major product)

A. 2-chloro-2-methyl butane

B. 2-chloro-3-methyl butane

C. 2, 2-dimethyl pentane

D. None of the above

Answer: A

8. Phenol can be tested by

A. Liebemann's nitroso test

B. $FeCl_3$ solution

C. bromine water

D. All of the above

Answer: D



9. Phenol react with PCl_5 to give mainly

A. p-chlorophenol

B. chlorobenzene

C. o and p-chlorophenol

D. triphenyl phosphate

Answer: D



A. ethoxy propane

- B. 1, 1-dimethyl ether
- C. 2-ethoxy isopropane
- D. 2-ethoxy propane

Answer: D



11. The compound which gives the most stable carbonium ion on dehydration is

A. $CH_3CH(CH_3)CH_2OH$

 $\mathsf{B.} (CH_3)_3 COH$

 $\mathsf{C.}\,CH_2=CHCH_2CH_2OH$

D. $CH_3CHOHCH_2 - CH_3$

Answer: B



12. Pinacol is

A. 3-methybutan-2-ol

B. 2, 2-methyl-2,3-butanediol

C. 2, 3-dimethyl-2-propanone

D. None of the above

Answer: B



13. Grignard reagent reacts with HCHO to produce a/an

A. secondary alcohol

B. anhydride

C. acid

D. primary alcohol

Answer: D

14. The product obtained by heating diethyl ether with HI is

A. C_2H_5l

 $\mathsf{B.}\, C_2 H_5 OH$

 $\mathsf{C.}\, C_2H_5OH+C_2H_5l$

D. $C_2H_5-C_2H_5$

Answer: C