CHEMISTRY

BOOKS - MHTCET PREVIOUS YEAR PAPERS AND PRACTICE PAPERS

ALCOHOLS, PHENOLS AND ETHERS

Example

1. $(CH_3)_2CHCH(CH_3)Oh \xrightarrow[-H_2O]{\text{Acid}} X$

The major product obtained in this reaction is

A. $(CH_3)_2CHCH = CH_2$

B. $(CH_3)_2C = CH - CH_3$

C. $1:1$ mixture of (a) and (b)

D. None of the above

Answer: B

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2. Phenol may be obtained from chlorobenzene using reagents.

A. $NaOH + HCl$

B. CO_2

C. H_2SO_4

D. $NaOH + CaO$

Answer: A

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3. Consider the following reactiosn,

The products Z and A respectively are

A. toluene, benzoic acid

B. benzaldehyde, benzoic acid

C. salicylaldehyde, benzene

D. benzoic acid, salicylaldehyde

Answer: D

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4. Which of the following reactions can be used for the preparation of 3°-buthyl methylether

A. $CH_3Br + (CH_3)_3CO^- Na^+ \rightarrow$

B. $(CH_3)_3\mathrm{CCl} + CH_3O^- Na^+ \rightarrow$

C. $(CH_3)_3COH + CH_3Cl \rightarrow$

D. $(CH_3)_3\mathrm{CCl} + CH_3Oh \rightarrow$

Answer: A

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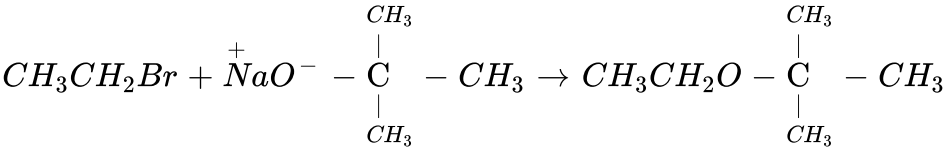
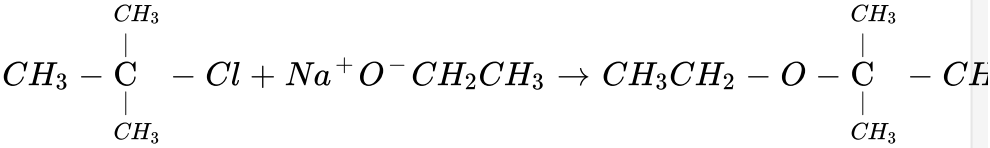
5. Which of the following reactions is/are feasible?

A.



B.



C. Both a and b

D. None of the above

Answer: A

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Practice Exercise Exercise 1 Topical Problems

1. Which of the following does not give iodoform test?

A. C_2H_5OH

B. C_6H_5OH

C. $(CH_3)_2CHOH$

D. All of these

Answer: B

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2. Conversion of ethyl alcohol into acetaldehyde is an example of

A. hydrolysis

B. oxidation

C. reduction

D. molecular rearrangement

Answer: B

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3. Catalytic dehydrogenation of a primary alcohol gives a/an

A. secondary alcohol

B. aldehyde

C. ketone

D. ester

Answer: B

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4. Dehydration of methyl alcohol with conc. H_2SO_4 yields

A. methane

B. ethane

C. dimethyl ether

D. acetone

Answer: C

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5. Propene on hydroboration and oxidation produces

A. CH_3CH_2CHO

B. $CH_3CHOHCH_3$

C. $CH_3CHOHCH_2OH$

D. $CH_3CH_2CH_2OH$

Answer: D

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6. The alcohols, propan-1ol and propan-2-ol are distinguished by

A. oxidation with conc. H_2SO_4 followed by reaction with Fehling solution

B. oxidation with alkaline $KMnO_4$ followed by reaction with Fehling solution

C. reaction with iodine and aqueous NaOH

D. reaction with Lucas reagent

Answer: D

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7. Boiling point of alcohol is comparatively higher than that of corresponding alkane due to

A. intermolecular hydrogen bonding

B. intramolecular hydrogen bonding

C. volatile nature

D. None of the above

Answer: A

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8. In the following reaction most stable intermediate is

$$CH_3-\underset{|}{\overset{CH_3}{CH}}CH=CH_2+H_2O\xrightarrow{H^+}$$

A. $CH_3\overset{CH_3}{\overset{|}{C}}H\overset{\oplus}{C}HCH_2CH_2$

B. $CH_3\overset{CH_3}{\overset{|}{C}}H\underset{\oplus}{C}HCH_3$

C. $CH_3\overset{CH_3}{\overset{|}{\underset{\oplus}{C}}}CH_2CH_3$

D. $CH_3\overset{CH_3}{\overset{|}{C}}H\overset{+}{C}HCH_2CH_2$

Answer: C

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9. Consider the following reaction,

$$A \xrightarrow[H_2SO_4]{K_2Cr_2O_7} \text{acetone}$$

Identify A in the above reaction.

A. propan-1-ol

B. propan-2-ol

C. butan-2-ol

D. ethanol

Answer: B

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10. Which of the following is hydrated to a maximum extent?

A. $CH_3 - \overset{\overset{CH_3}{|}}{\underset{\underset{CH_3}{|}}{C}} - CH = CH_2$

B. $CH_3 - CH = CH_2$

C. $CH_2 = CH_2$

D. $CH \equiv CH$

Answer: A

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11. The alcohol with highest boiling point is

A. $CH_3CH_2CH_2CH_2OH$

B. $CH_3CH_2CH(OH)CH_3$

C. $CH_3CH_2C(CH_3)_2OH$

D. $CH_3C(CH_3)_2CH_2OH$

Answer: A

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12. Which one of the following alcohols undergoes dehydration most easily?

A. $CH_3CH_2CH_2CH_2OH$

B. $CH_3CH_2 - \underset{\underset{CH_3}{|}}{CH} - CH_2 - CH_2OH$

C. $CH_3 - CH_2 - CH_2 - \underset{\underset{OH}{|}}{CH} - CH_3$

D. $CH_3 - CH_2 - \overset{\overset{CH_3}{|}}{\underset{\underset{OH}{|}}{C}} - CH_2CH_3$

Answer: D

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13. The most suitable reagent for the conversion of

$R - CH_2 - OH \rightarrow R - CHO$ is

A. $KMnO_4$

B. $K_2Cr_2O_7$

C. CrO_3

D. PCC (pyridine chloro chromate)

Answer: D

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14. In the reaction, $C_2H_5Oh \underset{\text{(Vapour)}}{\xrightarrow[300^\circ C]{Cu}} X$

The molecular formula of X is

A. C_4H_5O

B. $C_4H_{10}O$

C. C_2H_4O

D. C_2H_6

Answer: C

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15. A fruity smell is obtined by the reaction of ethanol with

A. CH_3COCH_3

B. PCl_5

C. CH_3COOH

D. CH_3CHO

Answer: C

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16. In the manufacture of ethanol from sugar, the enzymes used are

A. diastase and zymase

B. maltase and zymase

C. diastase and invertase

D. invertase and zymase

Answer: D

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17. In Lucas test of alcohols, appearance of cloudiness is due to the formation of

A. aldehydes

B. ketones

C. acid chlorides

D. alkyl chlorides

Answer: D

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18. The reactant (X) used in the following reaction is methyl magnesium bromide $+X \rightarrow 2-\text{methyl propan - 2 - ol}$

A. propanol

B. ethanal

C. propanone

D. butane

Answer: C

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

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

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

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

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

Answer: C

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20. Which of the following are benzylic alcohols

I $C_6H_5 - CH_2 - CH_2OH$

II $C_6H_5 - CH_2OH$

III. $C_6H_5 - \underset{\displaystyle CH_3}{\overset{|}{\mathrm{CH}}} - OH$

IV. $C_6H_5 - CH_2 - \underset{\displaystyle CH_3}{\overset{|}{\mathrm{CH}}} - OH$

select the correct option.

A. Only I

B. Both I and II

C. Both II and III

D. Both III and IV

Answer: C

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21. $CO + H_2 \xrightarrow[573K / 300atm]{X\ (\text{catalayst})} CH_3OH$, the catalyst X is :

A. Fe

B. Cr_2O_3 / ZnO

C. V_2O_5

D. Al_2O_3

Answer: B

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22. CH_3CH_2OH can be converted into CH_3CHO by..... .

A. catalytic hydrogenation

B. treatment with $LiAlH_4$

C. treatment with pyridinium chlorochromate

D. treatment with $KMnO_4$

Answer: C

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23. An allcohol gave Lucas test in about 5 minutes. When the alcohol was treated with hot concentrated H_2SO_4 it gave an alkene of molecular formula C_4H_8 which on ozonolysis gave C_2H_4O. The structure of alcohol is

A. $CH_3CHOHCH_2CH_3$

B. $CH_3CH_2CH_2CH_2OH$

C. $CH_3CHOHCH_2CH_2CH_3$

D. $(CH_3)_3C-OH$

Answer: A

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24. $CH_2OH.\ CH_2OH$ on heating with periodic acid gives

A. $2CO_2$

B. $2HCOOH$

C. $\begin{array}{l} CHO \\ | \\ CHO \end{array}$

D. $2HCHO$

Answer: D

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25. In the reaction given below, the product C is

$$CaC_2 \xrightarrow{H_2O} A \xrightarrow[HgSO_4]{\text{Dil. } H_2SO_4} B \xrightarrow{H_2/Ni} C$$

A. C_2H_5OH

B. CH_3CHO

C. CH_3OH

D. CH_3COOH

Answer: A

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26. The order or reactivity of the following alcohols is

A. 1 gt II gt III gt IV

B. I gt III gt II gt IV

C. IV gt III gt II gt I

D. IV gt III gt I gt II

Answer: C

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27. Which one of the following will most readily be dehydrated in acidic condition?

A. 

B. 

C. 

D. 

Answer: A

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28. Reaction of ROH with $R'MgX$ produces

A. RH

B. R'H

C. $R-R$

D. $R'-R'$

Answer: B

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29. In which of the following molecules, the cleavage by HlO_4 is not observed ?

A. 

B. 

C. 

D. 

Answer: A

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30. Which of the following reactions is not reversible ?

A. $RCOOH + R'Oh \xrightarrow{H^+} RCOOR' + H_2O$

B. $CH_3CH_2CH_2OH \xrightarrow{H^+} CH_3CH = CH_2 + H_2O$

C. $PCl_5 \rightarrow PCl_3 + Cl_2$

D. $CH_3OH + O_2 \rightarrow CO_2 + H_2O$

Answer: D

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31. Among the following ethers, which one will produce methyl alcohol on treatment with hot concentrated HI?

A. $CH_3 - CH_2 - CH_2 - CH_2 - O - CH_3$

B. $CH_3 - CH_2 - \underset{\displaystyle CH_3}{\overset{|}{\underset{|}{CH}}} - O - CH_3$

C. $CH_3 - \underset{\displaystyle CH_3}{\overset{\displaystyle CH_3}{\overset{|}{\underset{|}{C}}}} - O - CH_3$

D. $CH_3 - \underset{\displaystyle CH_3}{\overset{|}{\underset{|}{CH}}} - CH_2 - O - CH_3$

Answer: C

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32. Ester formation from CH_3COOH takes place to maximum extent when alcohol is

A. CH_3OH

B. CH_3CH_2OH

C. $(CH_3)_2CHOH$

D. $(CH_3)_3COH$

Answer: A

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33. $C_4H_{10}O$ gives white precipitate immediately with conc. HCl in the presence of anhydrous $ZnCl_2$. Alcohol can be

A. 

B. 

C. 

D. 

Answer: C

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34. Which of the following combination can be used to synthesise ethanol?

A. CH_3MgI and CH_3COCH_3

B. CH_3MgI and C_2H_5OH

C. CH_3MgI and $CH_3COOC_2H_5$

D. CH_3MgI and $HCOOC_2H_5$

Answer: C

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35. The mechanism followed when the alcoholes given below reacts with conc. HCl/anhydrous $ZnCl_2$

$\underset{(I)}{CH_3OH}$, $\underset{(II)}{CH_3CH_2OH}$, $\underset{(III)}{CH_3\overset{\overset{OH}{|}}{C}HCH_3}$

A. S_N1, S_N2, S_N2

B. S_N2, S_N2, S_N1

C. S_N2, S_N1, S_N1

D. S_N1, S_N1, S_N2

Answer: B

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36. Which of the following compounds can be used as antifreeze in automobile radiators?

A. Methyl alcohol

B. Glycol

C. Nitrophenol

D. Ethyl alcohol

Answer: B

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37. HCHO was treated with a reagent X. The product formed upon hydrolysis in the presence of an acid gave C_2H_5OH. The reagent X is

A. alcoholic KOH

B. alcoholic KCN

C. CH_3MgI

D. aqueous KOH

Answer: C

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38. Hydrolysis of alkyl halides has been compared. Which of the following comparision is incorrect ?

A. $CH_2 = CHBr > CH_2 = CHCH_2Br$

B. 

C. $CH_3 > CH_3Cl$

D. $(CH_3)_2CHBr > CH_3CH_2CH_2Br$

Answer: A

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39. Alkene is also formed as the major product in the hydrolysis of which of the following with NaOH ?

A. CH_3CH_2Br

B. $(CH_3)_2CHBr$

C. $(CH_3)_3CCH_2Br$

D. $(CH_3)_3CBr$

Answer: D

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40. Carbonyl compounds are reduced to alcohols by hydride reagents. This reduction involves

A. addition of two hydrogens across a $C = O$ bond

B. reduction of carbonyl group to an alkoxide which is protonated to alcohol

C. Both (a) and (b)

D. None of the above

Answer: C

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41. $CH_3\overset{O}{\overset{||}{C}}CH_2\overset{O}{\overset{||}{C}}OCH_3$ is reduced to $CH_3\underset{OH}{\underset{|}{CH}}CH_2\overset{O}{\overset{||}{C}}OCH_3$ by

A. $LiAlH_4$

B. $NaBH_4$

C. Both (a) and (b)

D. None of these

Answer: C

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42. During the dehydration of alcohols to alkenes by heating with conc. H_2SO_4, the initiating step is :

A. protonation of alcohol molecule

B. formation of carbocation

C. elimination of water

D. formation of an ester

Answer: A

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43. Which of the following alkenes will give same product by any method out of hydration, hydroboration-oxidation and oxymercuration-demercuration?

A. $CH_3CH = CH_2$

B. $CH_3CH = CHCH_3$

C. $CH_3\underset{\underset{CH_3}{|}}{C}HCH = CH_2$

D. 

Answer: B

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44. The product obtained on heating ethanol with conc. H_2SO_4 at $165^\circ - 170^\circ C$, is

A. $(C_2H_5)_2SO_4$

B. CH_3COOH

C. $CH_2 = CH_2$

D. $C_2H_5HSO_4$

Answer: C

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45. Which of the following statement is incorrect?

A. methanol is very toxic to humans, leading to blindness and even death

B. $98\ \%$ methanol $-H_2O$ mixture is called rectified spirit

C. methanol is used as a premium fuel to power racing car engines

D. ethanol is mixed with petroleum products to produce non-lead gasoline for use internal combustion engine

Answer: B

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46. Denatured alcohol is

A. ethanol + methanol

B. rectified spirit + methanol + naphtha

C. undistilled ethanol

D. rectified spirit

Answer: B

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47. Which is incorrect order for dehydration of alcohol ?

A. 

B. 

C. 

D. $CH_3CH_2\underset{\underset{OH}{|}}{C}HCH_3 > CH_3CH_2CH_2CH_2OH$

Answer: B

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48. Which one of the following reagent can differentiate between C_2H_4OH and CH_3OH?

A. H_2O

B. $Na_2CO_3 + l_2$

C. NH_3

D. HCl

Answer: B

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49. The only alcohol that can be prepared by the indirect hydration of alkene is

A. ethyl alcohol

B. propyl alcohol

C. iso-butyl alcohol

D. methyl alcohol

Answer: D

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50. Ethyl alcohol exhibits acidic nature on reaction with

A. acidic $K_2Cr_2O_7$

B. sodium metal

C. HCl

D. CH_3COOH

Answer: B

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51. 

The product (s) of the reaction can be

A. 

B. 

C. Both (a) and (b)

D. None of correct

Answer: C

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52. Primary, secondary and tertiary alcohols are distinguished from one another by

A. Ninhydrin test

B. Tollen's reagent

C. Lucas test

D. Wittig reaction

Answer: C

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53. Which of the estes shown, after reduction with $LiAlH_4$ and aqueous workup, will yield two molecules of only a single alcohol ?

A. $CH_3CH_2CO_2CH_2CH_3$

B. $C_6H_5COCH_2C_6H_5$

C. $C_6H_5CO_2CH_2C_6H_5$

D. None of the above

Answer: C

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54. In the conversion of ethanol into methaonl which of the following reagents will be used ?

A. $K_2Cr_2O_7 / H_2SO_4$

B. $NaOH + CaO$

C. $Cl_2 + aq.\ KOH$

D. All of the above

Answer: D

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55. Which of the following hydrolysed at the fastest rate ?

A. 

B. 

C. 

D. 

Answer: A

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56. Iodoform reaction is answered by all, except

A. $CH_3 - \underset{\underset{|}{OH}}{CH} - CH_2 - COOH$

B. CH_3CHO

C. $CH_3 - CH_2 - OH$

D. $CH_3 - CH_2 - CH_2OH$

Answer: D

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57. For the following reaction, select the statement that best describes the situation

$$RCH_2OH + \text{PCC}\left[C_5H_5NH^+ClCrO_3^-\right] \rightarrow$$

A. The alcohol is oxidised to an acid and the Cr(VI) is reduced

B. The alcohol is oxidised to an aldehyde and the Cr(VI) is reduced

C. The alcohol is reduced to an aldehyde and the Cr(III) is oxidised

D. The alcohol is oxidised to a ketone and the Cr(VI) is reduced

Answer: B

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58. Which product is obtained from the following esterification reaction ?

$$C_6H_5CH_2\overset{\overset{O}{||}}{C}OH + CH_3CH_2\overset{18}{Q}OH \xrightarrow[\text{Heat}]{H^+} ?$$

A. $C_6H_5CH_2\overset{\overset{O}{||}}{C}OCH_2CH_3$

B. $C_6H_5CH_2\overset{\overset{O}{||}}{C} - .^{18}OCH_2CH_3$

C. $C_6H_5CH_2\overset{\overset{O}{||}}{C} - .^{18}OCH_2CH_3$

D. $CH_3CH_2\overset{\overset{.^{18}O}{||}}{C}OOCH_2C_6H_5$

Answer: B

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59. Which of the following compounds is most acidic?

A. CH_4

B. C_2H_6

C. $CH \equiv CH$

D. C_2H_5OH

Answer: D

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60. The $-OH$ group of an alcohol or of the $-COOH$ group of a carboxylic acid can be replaced by $-Cl$ using

A. phosphorus pentachloride

B. hypochlorus acid

C. chlorine

D. hydrochloric acid

Answer: A

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61. Primary, secondary and tertiary alcohols can be distinguished by performing

A. Beilstein's test

B. Victor Meyer's test

C. Fehling's solution test

D. Hofmann's test

Answer: B

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62. HBr reacts fastest with

A. propane-1-ol

B. propane-

C. 2-methyl propane-1-ol

D. 2-methyl propane-2-ol

Answer: D

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63. CH_3CH_2OH convert into CH_3CHO in the presence of

A. $Na_2Cr_2O_7$ and $NaOH$

B. $Na_2Cr_2O_7$ and $dil.\ H_2SO_4$

C. $NaOH$

D. Fe in the presence of NaOH

Answer: B

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64. The order of melting point of ortho, para, meta nitrophenol is

A. o gt m gt p

B. p gt m gt o

C. m gt p gt o

D. p gt o gt m

Answer: B

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65. When phenol is treated with D_2SO_4 / D_2O, some of the hydrogens get exchanged. The final product in this exchange reaction is

A. 

B. 

C. 

D. 

Answer: A

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66. Phenol is treated with bromine water and shaken well. The white precipitate formed during the process is

A. m-bromophenol

B. 2, 4, 6-tribromophenol

C. 2, 4- dibromophenol

D. a mixture of o - and p - bromophenols

Answer: B

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67. Among the following sets of reactants which one produces anisole?

A. $CH_3CHO, RMgX$

B. $C_6H_5OH, NaOH, CH_3I$

C. C_6H_5OH, neutral $FeCl_3$

D. $C_6H_5 - CH_3, CH_3COCl, AlCl_3$

Answer: B

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68. Phenol $\xrightarrow{X}$ forms a tribromo derivative. X is

A. bromine in benzene

B. bromine in water

C. potassium bromide solution

D. bromine in carbon tetrachloride at $0^\circ C$

Answer: B

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69. The product of the following reaction is

A. o-nitrophenol

B. m-nitrophenol

C. 2, 4-dinitrophenol

D. 2, 4, 6-trinitrophenol

Answer: D

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70. Phenol reacts with NH_3 to give

A. benzamide

B. benzoic acid

C. aniline

D. None of the above

Answer: C

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71. Which of the following reaction involves carbon-carbon bond formation?

A. Reimer-Tiemann reaction

B. Hydroboration - oxidation

C. Cannizaro reaction

D. Reaction of primary alcohol with PCC

Answer: A

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72. Which of the following is most acidic ?

A. 

B. 

C. 

D. 

Answer: C

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73. Correct acidic order of the following compounds is

A. I gt II gt III

B. III gt I gt II

C. II gt III gt I

D. I gt III gt II

Answer: B

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74. Cumene process is the most important commercial method for the manufacture of phenol. Cumene is

A. 1-methyl ethyl benzene

B. ethyl benzene

C. vinyl benzene

D. propyl benzene

Answer: A

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75. $\text{Phenol} \xrightarrow[\text{(ii) } CO_2/140^\circ C]{\text{(i) NaOH}} A \xrightarrow{H^+/H_2O} B$

In the above reaction, the end product B is

A. salicyladehyde

B. salicylic acid

C. phenyl acetate

D. aspirin

Answer: B

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76. Phenol is prepared by which of the following reaction ?

A. 

B. 

C. 

D. 

Answer: A

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77. Which of the following is obtained on treating phenol with conc. HNO_3 / H_2SO_4 mixture ?

A. 

B. 

C. 

D. None of these

Answer: C

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78. On Friedel-Crafts acetylation, anisole yields

A. 2-methoxyacetophenone

B. 4-methoxyacetophenone

C. Both (a) and (b)

D. None of the above

Answer: C

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79. In the Liebermann's test for phenols, the blue or green colour produced is due to the formaton of

A. 

B. 

C. 

D. 

Answer: D

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80.  is an example of

A. 1,2-addition of HCl followed by tautomerism

B. 1,2-addition followed by reduction

C. 1,4-addition followed by tautomerism

D. 1,4-addition followed by oxidation

Answer: C

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81. The main product obtained from phenol with PCl_5 is

A. BHC

B. hexachlorobenzene

C. chlorobenzene

D. triphenyl phosphate

Answer: D

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82. Phenol is heated with phthalic anhydride in the presence of conc. H_2SO_4. The product gives pink colour with alkali. The product is

A. phenolphthalein

B. bakelite

C. salicylic acid

D. fluorescein

Answer: A

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83. Picric acid is

A. 2,4,6-tribromophenol

B. 2,4,6-trinitrotoluene

C. 2,4,6-trinitrophenol

D. None of these

Answer: C

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84. Sulphonation of phenol with conc. H_2SO_4 at 288-298 K gives

A. o-hydroxy benzene sulphonic acid

B. sulphanilic acid

C. p-hydroxy benzene sulphonic acid

D. sulphone

Answer: A

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85. Acidity of phenol is due to

A. hydrogen bonding

B. phenolic group

C. benzene ring

D. resonance stabilisation of its anion

Answer: D

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86. Phenol on treatment with diethyl sulphate in presence of $NaOH$ gives

A. phenetole

B. anisole

C. diphenyl ether

D. diethyl ether

Answer: A

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87. By heating phenol with chloroform in alkali, it is converted into

A. salicylic acid

B. salicylaldehyde

C. anisole

D. phenyl benzoate

Answer: B

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88. C_2H_5OH and C_6H_5OH can be distinguished by

A. $Br_2 + H_2O$

B. $FeCl_3$

C. $l_2 + NaOH$

D. Both (b) and (c)

Answer: D

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89. The most acidic compound is

A. phenol

B. benzyl alcohol

C. m-chlorophenol

D. cyclohexanol

Answer: C

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90. Which of the following can be used to convert into phenol in one or more steps?

A. 

B. 

C. 

D. All of these

Answer: D

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91. Ortho and para-nitrophenols are separated by which of the following method?

A. Sublimation

B. Crystallisation

C. Steam-distillation

D. Filteration

Answer: C

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92. The most unlikely representation of resonance structures of p-nitrophenoxide ion is

A. 

B. 

C. 

D. 

Answer: C

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93. The reaction used for the preparation of phenol is

A. 

B. 

C. 

D. All of the above

Answer: D

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94. Phenol can be distinguished from ethanol by the following reagents except

A. sodium

B. $NaOH / l_2$

C. neutral $FeCl_3$

D. Br_3 / H_2O

Answer: A

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95. Phenol when it first reacts with concentrated sulphuric acid and then with concentrated nitric acid gives:

A. 2, 4, 6-trinitrophenol

B. o-nitrophenol

C. p-nitrophenol

D. nitrobenzene

Answer: A

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96. Salicylaldehyde is obtained when phenol is heated with $CHCl_3$ and aqueous NaOH. This reaction is known by which name?

A. Carbylamine reaction

B. Hofmann's reaction

C. Reimer-Tiemann reaction

D. Kolbe-Schmidt reaction

Answer: C

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97. Consider the following reaction

Phenol $\xrightarrow[\text{dust}]{Zn} X \xrightarrow[\substack{\text{Anhydrous} \\ AlCl_3}]{CH_3Cl} Y \xrightarrow[KMnO_4]{\text{Alkaline}} Z$

The product Z is

A. Toluene

B. Benzaldehyde

C. Benzoic acid

D. Benzene

Answer: C

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98. 

The major product in the above reaction is

A. p-benzoquinone

B. p-benzenediol

C. o-and p-chlorophenols

D. None of these

Answer: B

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99. Which one of the following properties is exhibited by phenol ?

A. It is soluble in aq NaOH and evolves CO_2 with aq $NaHCO_3$

B. It is soluble in aq NaOH and does not evolve CO_2 with aq $NaHCO_3$

C. It is not soluble in aq NaOH but evolves CO_2 with aq $NaHCO_3$

D. It is insoluble in aq NaOH but does not evolve CO_2 with aq $NaHCO_3$

Answer: B

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100. Which of the following reactions will not yield p-tert butylphenol?

A. $\text{Phenol} + CH_3 - \overset{CH_3}{\underset{|}{C}} = CH_2 \xrightarrow{H^+}$

B. $\text{Phenol} + (CH_3)_3COH \xrightarrow{H^+}$

C. $\text{Phenol} + (CH_3)_3C.Cl \xrightarrow{AlCl_3}$

D. $\text{Phenol} + CHCl_3 \xrightarrow{NaOH}$

Answer: D

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101. Phenol $\xrightarrow[(ii)\,CO_2/140^\circ C]{(i)\,NaOH} A \xrightarrow{H^+/H_2O} B \xrightarrow{Ac_2O} C$ in this reaction the end product C is

A. salicylaldehyde

B. salicylic acid

C. phenyl acetate

D. aspirin

Answer: D

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102. The IUPAC name of m-cresol is

A. 3-methylphenol

B. 3-chlorophenol

C. 3-methoxyphenol

D. benzene-1, 3-diol

Answer: A

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103. Phenol react with PCl_5 to give mainly

A. p-chlorophenol

B. chlorobenzene

C. o-and p-chlorophenols

D. triphenylphosphate

Answer: D

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104. The correct decreasing order of acid strength of the following compounds.

A. V gt IV gt II gt I gt II

B. II gt IV gt I gt III gt V

C. IV gt V gt III gt II gt I

D. V gt IV gt III gt II gt I

Answer: B

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105. Phenol is soluble in water because

A. of weak hydrogen bonding between phenol and water molecules

B. of intermolecular hydrogen bonding between phenol molecules

C. it has a higher boiling point than that of water

D. None of the above

Answer: A

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106. In the following reaction,

X is identified as

A. 2,4,6-tribromophenol

B. 2-bromo-4-hydroxybenzene sulphonic acid

C. 3,5-dibromo-4-hydroxybenzene sulphonic acid

D. 2-bromophenol

Answer: A

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107. A simple method to remove peroxides from ethers is to treat them with an aqueous solution of :

A. KI

B. $KCNS$

C. $Na_2S_2O_3$

D. Br_2

Answer: A

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108. The major product obtained when tert- butyl bromide is heated with sodium ethoxide is

A. 2-methylprop-1-ene

B. 1-butene

C. 2-butene

D. ethene

Answer: A

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109. Tert-butyl methyl ether on heating with anhydrous HI in ether gives

A. $CH_3OH + (CH_3)_3Cl$

B. $CH_3I + (CH_3)_3COH$

C. $CH_3I + (CH_3)_3Cl$

D. None of the above

Answer: B

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110. State the product formed during the reaction between sodium phenoxide and ethyl iodide on heating :

A. Benzyl alcohol

B. Phenol

C. Phenetol

D. Cresol

Answer: C

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111. The bond angle in $R-OR$ is

A. 110°

B. 109°

C. 108°

D. None of these

Answer: A

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112. What are the products in the following reaction ?

$$C_2H_5OC_2H_5 \xrightarrow[\text{cold}]{\text{Hl}} X + Y$$

A. $CH_3COOH, CH_2 = CH_2$

B. $CH_3CHO, CH_2 = CH_2$

C. C_2H_5OH, C_2H_5l

D. None of the above

Answer: C

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113. The reaction of  with H_2O and $R - MgX$ produces

A. $RCHOHR$

B. $RCHOHCH_3$

C. R_2CHCH_2OH

D. RCH_2CH_2OH

Answer: D

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114. Which of the following does not react with sodium metal ?

A. $(CH_3)_2O$

B. CH_3CH_2OH

C. CH_3COOH

D. C_6H_5OH

Answer: A

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115. Major additon product of the following reaction is

A. 

B. 

C. 

D. 

Answer: B

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116. Formation of di ethyl ether form ethanol is based on a

A. dehydration reaction

B. dehydrogenation reaction

C. hydrogenation reaction

D. homolytic fission reaction

Answer: A

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

A. C_2H_5I

B. C_2H_5OH

C. $C_2H_5OH + C_2H_5I$

D. $C_2H_5 - C_2H_5$

Answer: C

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118. Ether is a good solvent for Grignard reagent. Which property makes it good solvent ?

A. It acts as a base towards acidic magnesium

B. It makes H-bonding with Grignard reagent

C. It acts as an acid towards basic magnesium

D. It is electron-rich

Answer: A

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119. Which of the following is the best method for making iso-propylmethyl ether ?

A. $CH_3I + (CH_3)_2CHOH \rightarrow$

B. $CH_3I + (CH_3)_2CHO^- \rightarrow$

C. $(CH_3)_2CHI + CH_3O^- \rightarrow$

D. $(CH_3)_2CHCl + CH_3Oh \rightarrow$

Answer: B

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Practice Exercise Exercise 2 Miscellaneous Problems

1. 

A. 

B. 

C. 

D. 

Answer: A

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2. Which of the following is not a characteristic of alcohol ?

A. They are lighter than water

B. Their boiling points rise fairly and uniformly with rising molecular weight

C. Lower members are insoluble in water and in organic solvents but the solubility regularly increases with molecular mass

D. Lower members have a pleasant smell and burning taste, higher members are colourless and tasteless

Answer: C

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3. In which of the following reactions of alcohol there is no cleavage of C-O bond ?

A. Dehydration reaction of alcohol

B. Oxidation reaction of alcohol

C. Reduction reaction of alcohol

D. Reaction of alcohol with phosphorus tribromide

Answer: B

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4. When primary alcohol is oxidised with Cl_2, it gives

A. CH_3CHO

B. CH_3COCH_3

C. CH_3COCl

D. $COCl_2$

Answer: A

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5. The best reagent to convert pent-3-en-2-ol into pent-3-en-2-one is

A. pyridinium chlorochromate

B. chromic anhydride in glacial acetic acid

C. acidic dichromate

D. acidic permanganate

Answer: B

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6. The acidic hydrolysis of ether (X) shown is fastest when

A. one phenyl group is replaced by a methyl group

B. one phenyl group is replaced by a para-methylphenyl group

C. two phenyl groups are replaced by two para-methyoxyphenyl groups

D. no structural change is made to x

Answer: C

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7. A compound soluble in conc. H_2SO_4. It does not decolourise bromine in CCl_4 but oxidised by chromic anhydride in aqueous H_2SO_4 within two seconds, turning organs solution to blue, green and then opaque. The original compound is :

A. secondary alcohol

B. an ether

C. an alkene

D. a primary alcohol

Answer: D

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8. Which one of the following is not expected to undergo iodoform reaction?

A. Propan-2-ol

B. 1-phenylethanol

C. 2-butanol

D. Diphenyl methanol

Answer: D

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9. The correct order of boiling point for primary (1°). Secondary (2°) and tertiary (3°) alcohol is

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

B. $3^\circ > 2^\circ > 1^\circ$

C. $2^\circ > 1^\circ > 3^\circ$

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

Answer: A

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10. When ethylene glycol is heated with acidified potassium permanganate, the main organic compound obtained is

A. oxalic acid

B. glyoxal

C. formic acid

D. acetaldehyde

Answer: C

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11. The alcohol obtained by the hydrolysis of oils and fats is

A. glycol

B. glycerol

C. propanol

D. pentanol

Answer: B

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12. When compound 'X' is oxidised by acidified potassium dichromate , compound 'Y' is formed. Compound 'Y' on redcution with $LiAlH_4$ gives 'X'. 'X', and 'Y' respectively are :

A. C_2H_5OH, CH_3COOH

B. CH_3COCH_3, CH_3COOH

C. C_2H_5OH, CH_3COCH_3

D. CH_3CHO, CH_3COCH_3

Answer: A

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13. Upon treatment with I_2 and aqueous $NaOH,$ which of the following compounds will form iodoform ?

A. $CH_3CH_2CH_2CH_2CHO$

B. $CH_3CH_2COCH_2CH_3$

C. $(CH_3CH_2CH_2CH_2CH_2OH$

D. $CH_3CH_2CH_2CH(OH)CH_3$

Answer: D

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14. The products obtained when anisole is heated in a sealed tube with HI are

A. 

B. 

C. 

D. None of these

Answer: A

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15. In the reaction

$$CH_3\overset{CH_3}{\underset{|}{C}}H - CH_2 - O - CH_2CH_3 + HI \xrightarrow{Heated}$$

Which of the following compounds will be formed?

A. $CH_3 - \overset{CH_3}{\underset{|}{CH}} - CH_2I + CH_3CH_2OH$

B. $CH_3 - \underset{\underset{|}{CH_3}}{CH} - CH_3 + CH_3CH_2OH$

C. $CH_3 - \underset{\underset{|}{CH_3}}{\overset{\overset{|}{CH_3}}{CH}} - CH_2OH + CH_3 - CH_3$

D. $CH_3 - \overset{\overset{|}{CH_3}}{CH} - CH_2OH + CH_3CH_2I$

Answer: D

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16. Which among the following compounds will give a secondary alcohol on reacting with Grignard reagent followed by acid hydrolysis?

I. $HCHO$

II. C_2H_5CHO

III. CH_3COCH_3

IV. C_2H_5COOH

Select the correct answer using the codes given below.

A. Only II

B. Only III

C. Both I and IV

D. Both II and IV

Answer: D

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17. Ethylene oxide when treated with Grignared reagent yeild

A. Secondary alcohol by S_N1

B. tertiary alcohol

C. cyclopropyl alcohol

D. primary alcohol

Answer: D

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18. Which of the following combination can be used to synthesise ethanol?

A. CH_3MgI and CH_3COCH_3

B. CH_3MgI and C_2H_5OH

C. CH_3MgI and $CH_3COOC_2H_5$

D. CH_3MgI and $HCHO$

Answer: D

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19. The reaction involved in the oil of winter green test is salicylic acid $\xrightarrow[\text{Conc. } H_2SO_4]{\Delta}\text{product}$. The product is treated with Na_2CO_3 solution. The missing reagent in the above reaction is

A. phenol

B. NaOH

C. ehanol

D. methanol

Answer: D

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20. Salicylic acid is prepared from phenol by :

A. Reimer-Tiemann reaction

B. Kolbe's reaction

C. Kolbe's electrolysis reaction

D. None of the above

Answer: A

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21. The correct order of reactivity of hydrogen halides with ethyl alcohol is

A. $HF > HCl > HBr > HI$

B. $HCl > HBr > HF > HI$

C. $HBr > HBr > HI > HF$

D. $HI > HBr > HCl > HF$

Answer: D

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22. $C_4H_8O(A)$ changes to 3° alcohol by reduction with $LiAlH_4$. Thus, A is

A. $CH_3\overset{\overset{O}{||}}{C}CH_2CH_3$

B. $CH_3CH_2CH_2CHO$

C. 

D. 

Answer: C

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23. The compound which gives turbidity immediately with Lucas reagent at room temperature is

A. butan-1-ol

B. butan-2-ol

C. 2-methyl propan -2-ol

D. 2-methyl propan-1-ol

Answer: C

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24.

A and B respectively are

A. $H_2 / Pt, LiAlH_4 / H_2O$

B. $H_2 / Pt, H_2 / PT$

C. $LiAlH_4 / H_2O, LiAlH_4 / H_2O$

D. $LiAlH_4 / H_2O, H_2 / Pt$

Answer: D

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25. The main product of the following reaction is

$C_6H_5CH_2CH(OH)CH(CH_3)_2 \xrightarrow{\text{conc.}H_2SO_4}$?

A.

B.

C.

D. 

Answer: A

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26. $C_2H_4O(A)$ reacts with CH_3MgBr followed by decomposition with $H_3O^{\oplus}$ to give 2° alcohol. Thus, A is

A. $CH_2 = CHOH$

B. CH_3CHO

C. 

D. None of these

Answer: B

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27. Boiling point of $CH_3CH_2OH(351K)$ is much higher than that of isomeric ether $(CH_3)_2O(248K)$. This indicates

A. hydrogen bonds are much stronger intermolecular attractions than dipole-dipole attractions

B. dipole-dipole attractions are much stronger than hydrogen bonds

C. $(CH_3)_2O$ has two hydrophobic groups while CH_3CH_2OH has one

D. $(CH_3)_2O$ has two hydrophilic groups while CH_3CH_2OH has one

Answer: A

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28. In the following sequence of reactions,

$CH_3CH_2OH \xrightarrow{P+I_2} A \xrightarrow[ether]{Mg} B \xrightarrow{HCHO} C \xrightarrow{H_2O} D$ The compound D is

A. butanal

B. n-butyl alcohol

C. n-propyl alcohol

D. propanal

Answer: C

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29. Which of the following statement is correct for the following dehydration of alcohol (A) leading to the formation of styrene (B) ?

A. Intermediate is carbocation

B. Carbocation is resonance stabillised

C. It takes place rapidly

D. All abvoe the statements are correct

Answer: D

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30. An organic compound 'X' on treatment with pyridinium chlorochromate in dichloromethane gives compound 'Y'. Compoun 'Y', reacts with I_2 and alkali to form tri-iodomethane. The compound 'X' is :

A. C_2H_5OH

B. CH_3CHO

C. CH_3COOH

D. CH_3COOH

Answer: A

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31. $CH_3 - \underset{\underset{CH_3}{|}}{\overset{CH_3}{\overset{|}{C}}} - CH = CH_2 \rightarrow CH_3 - \underset{\underset{CH_3}{|}}{\overset{CH_3}{\overset{|}{C}}} - \underset{\underset{OH}{|}}{CH} - CH_3$

The abvoe change can be proceed by

A. acid catalysed hydration

B. oxymercuration-demercuration

C. hydroboration-oxidation

D. any method mentioned above

Answer: B

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32. The dehydration of $2-$ Methyl butanol with conc. H_2SO_4 gives

A. 2-methyl butene as major product

B. pentene

C. 2-methyl but-2-ene as major product

D. 2-methyl pent-2-ene

Answer: A

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33. 

A. 

B. 

C. 

D. 

Answer: B

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34. Phenol is heated with a solution of mixture of KBr and $KBrO_3$. The major product obtained in the above reaction is

A. 2-bromophenol

B. 3-bromophenol

C. 4-bromophenol

D. 2, 4, 6-tribromophenol

Answer: D

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35. 

A is

A. 

B. 

C. 

D. 

Answer: A

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36. Chlorobenzene $\xrightarrow[X]{\text{Reaction}}$ Phenol $\xrightarrow[Y]{\text{Reaction}}$

Salicylaldehyde X and Y reaction respectively are

A. Fries rearrangement and Kolbe-Schmidt

B. Cumene and Reimer-Tiemann

C. Dow and Reimer-Tiemann

D. Dow and Friedel-Craft

Answer: C

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37. $(C_2H_5O)_2CO \xrightarrow[H_3O^+]{CH_3MgBr\,(\text{excess})} A$. A (alcohol) can also be obtained by

:

A. $CH_3CH_2CHO \xrightarrow[H_3O^+]{CH_3MgBr(2\text{ mol})}$

B. $CH_3\overset{\overset{O}{||}}{C}OC_2H_5 \xrightarrow[H_3O^+]{CH_3MgBr\ \ (2\text{ mol})}$

C. $CH_3\overset{\overset{O}{||}}{C}CH_3 \xrightarrow[H_3O^+]{CH_3MgBr\ \ (1\text{ mol})}$

D. Both (b) and (c)

Answer: D

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38. The following reaction is known as

A. Perkin reaction

B. Gattermann reaction

C. Kolbe reaction

D. Gattermann-aldehyde reaction

Answer: D

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39. 

A. 

B. 

C. 

D. None of the above

Answer: A

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40. Dehydration of alcohols,

will be in the order

A. I lt II lt III lt IV

B. I gt II gt III gt IV

C. III lt II lt I lt IV

D. II lt III lt IV lt I

Answer: C

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41. The structure of the compound that gives a tribromo derivative on treatment with bromine water is :

A. 

B. 

C. 

D. 

Answer: A

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42. 

The product of the above reaction is

A. $C_6H_5COC_2H_5$

B. $C_2H_5OC_2H_5$

C. $C_6H_5OC_6H_5$

D. C_6H_5I

Answer: A

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43. Arrange the following compounds in increasing order of boiling point

:

Prpane-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

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44. One mole of an organic compound A with the formula C_3H_8O reacts completely with two moles of HI to form X and Y. When Y is boiled with aquous alkali it forms Z.Z answers the iodoform test. The compound A is

A. propane-2-ol

B. propane-1-ol

C. ethoxyethane

D. methoxyethane

Answer: D

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45. An organic compound containing C, H and O gives red colouration with sodium nitroprusside solution but does not reeduce Tollen's reagent and yields chloroform on treating with NaOH and Cl_2.The compound is

A. CH_3CH_2OH

B. $CH_3\underset{\underset{OH}{|}}{CH}CH_3$

C. CH_3COCH_3

D. $(CH_3)_3CH - CHO$

Answer: C

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46. The product is

A. 

B. 

C. 

D. 

Answer: A

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47. Which of the following compounds when heated with CO at 423K and 500 atm. Pressure in presence of BF_3 forms ethyl propionate ?

A. C_2H_5OH

B. CH_3OCH_3

C. $C_3H_5OC_2H_5$

D. $CH_3OC_2H_5$

Answer: C

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48. In the reaction given below, X is

$$C_6H_5MgBr + CH_3OH \rightarrow X$$

A. C_6H_6

B. C_6H_5OH

C. $C_6H_5OCH_3$

D. CH_3COCH

Answer: A

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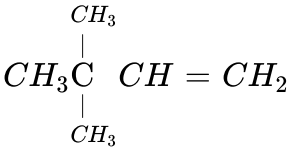
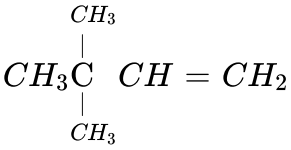
49. Consider the following reactions,

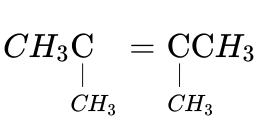
I. $CH_3CH_2\underset{\underset{OH}{|}}{CH}CH_3 \xrightarrow{H^+} \text{A (major)}$

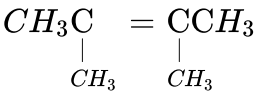
II. $CH_3\underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}} - \underset{\underset{OH}{|}}{CH}CH_3 \xrightarrow{H^+} \text{B (major)}$

A and B (bot alkenes) respectively are

A. $CH_3CH=CHCH_3$, 

B. $CH_3CH_2CH=CH_3$, 

C. $CH_3CH=CHCH_3$, 

D. $CH_3CH_2CH=CH_2$, 

Answer: C

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50. Which observation will be given by compound $H_3C-\underset{\displaystyle CH_3}{\overset{\displaystyle CH_3}{\overset{|}{\underset{|}{C}}}}-CH_2OH$ with Lucas reagent?

A. Solution becomes milky

B. Oily drops are separated

C. Coloured layer

D. Reaction does not take place

Answer: A

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51. What are X and Y in the following reaction sequence ?

$C_2H_5OH \xrightarrow{[O]} X \xrightarrow{Cl_2} Y$

A. C_2H_5Cl, CH_3CHO

B. CH_3CHO, CH_3CO_2H

C. CH_3CHO, CCl_3CHO

D. C_2H_5Cl, CCl_3CHO

Answer: C

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52. In the following reaction, X and Y respectively are

$$C_2H_5OH \xrightarrow{KMnO_4/H^+} X \xrightarrow[H_2SO_4/\Delta]{Y} CH_3CO_2C_2H_5$$

A. CH_3OH, C_2H_5OH

B. CH_3CHO, CH_3OH

C. CH_3CO_2H, C_2H_5OH

D. C_2H_4, CH_3CO_2H

Answer: C

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53. Which has maximum pK_a value ?

A. 

B. 

C. 

D. 

Answer: D

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54. Cyclohexene can be exclusively prepared from cyclohexanol through

A. conc. $HCl + ZnCl_2$

B. conc. H_3PO_4

C. HBr

D. conc. HCl

Answer: B

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55. The electrophile involved in the Reimer-Tiemann reaction is

A. dichloromethyl cation, $\overset{+}{C}HCl_2$

B. formyl cation $\overset{+}{C}HO$

C. trichloromethyl anion, $\overset{-}{C}Cl_3$

D. dichloro carbene : CCl_2

Answer: D

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56. Maximum dehydration takes place in

A. 

B. 

C. 

D. 

Answer: B

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57. Which is the following cannot be prepared by using Williamson synthesis ?

A. Di-tert-butyl ether

B. Methyoxybenzene

C. Benzyl p-nitrophenyl ether

D. Methyl tertiary butyl ether

Answer: A

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58. Phenol on reaction with Br_2 in non-polar aprotic solvent furnishes

A. p-bromophenol

B. m-bromophenol

C. o/p-bromophenol

D. 2,4,6-tribromophenol

Answer: C

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59. Rank the transition states that occur during the following reaction steps in order of increasing stability (least $\rightarrow$ stable)

1. $H_3C - \overset{+}{O}H_2 \rightarrow CH_3^+ + H_2O$

2. $(CH_3)_3C - \overset{+}{O}H_2 \rightarrow (CH_3)_3C^+ + H_2O$

3. $(CH_3)_2CH - \overset{+}{O}H_2 \rightarrow (CH_3)_2CH^+ + H_2O$

A. I lt II lt III

B. II lt III lt I

C. I lt III lt II

D. II lt I lt III

Answer: C

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60. An organic compound B is formed by the reaction of ethylmagnesium iodide (CH_3CH_2MgI) with a substance A, followed by treatment with dilute aqueous acid. Compound B does not react with PCC in dichloromethane. Identify A ?

A. $CH_3\overset{O}{\overset{||}{C}}H$

B. $H_2C=O$

C. 

D. $CH_3CH_2\overset{O}{\overset{||}{C}}CH_3$

Answer: D

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61. When $H_2C=CH-O-CH_2CH_3$ reacts with one molre of HI, one of the product formed is ,

A. ethane

B. ethanol

C. iodoethane

D. ethanal

Answer: C

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62. 

The IUPAC name of B is

A. 3-methylbutane-2-ol

B. 2-methylbutane-3-ol

C. 2-methylbutane-2-ol

D. pentan-2-ol

Answer: C

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63. Phenol on treatment with conc. HNO_3 gives

A. picric acid

B. styphinic acid

C. Both (a) and (b)

D. None of these

Answer: A

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64. The strongest acid among the following aromatic compound is

A. o-nitrophenol

B. phenol

C. p-nitrophenol

D. m-nitrophenol

Answer: B

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65. The acid which do not contain carboxylic acid group is

A. glutaric acid

B. picric acid

C. stearic acid

D. terephthalic acid

Answer: D

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66. Conversion of ethyl alcohol into acetaldehyde is an example of

A. molecular rearrangement

B. oxidation

C. reduction

D. hydrolysis

Answer: B

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67. 0.44 g of a monhydric alcohol when added to methyl magnesium iodide in ether liberates at STP, $112cm6(3)$ of methane. With PCC the same alcohol forms a carbonyl compound that answers silver mirror test. The monohydric alcohol is

A. $H_3C - \underset{|}{\underset{OH}{CH}} - CH_2 - CH_3$

B. $(CH_3)_3C - CH_2OH$

C. $H_3C - \underset{|}{\underset{OH}{CH}} - CH_2 - CH_3$

D. $(CH_3)_2CH - CH_2OH$

Answer: B

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68. For the sequence of reactions,

$A \xrightarrow{C_2H_5Mgl} B \xrightarrow{H_2O/H^+}$ tert- pentyl alcohol.

The compound A will be

A. 2-butanone

B. acetaldehyde

C. acetone

D. propanal

Answer: C

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69. $R - CH_2 - CH_2OH$ can be converted into RCH_2CH_2COOH the correct sequence of reagent is:

A. PBr_3, KCN, H_3O^+

B. $PBr_3, KCN, H_2/Pt$

C. KCN, H_3O^+

D. PBr_3, H_3O^+

Answer: A

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70. 

A. $CH_3 - \overset{\overset{CH_3}{|}}{CH} - CH_2 - CH_3$

B. $CH_3 - \overset{\overset{CH_3}{|}}{\underset{\underset{CH_3}{|}}{\underset{CH_3}{C}}} - CH_3$

C. 

D. $CH_3 - \overset{\overset{CH_3}{|}}{CH} - CH_2CH_2CH_3$

Answer: C

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71. An unknown alcohol is treated with the "Lucas reagent" to determine whether the alcohol is primary, secondary or tertiary. Which alcohol reacts fastest and by what mechanism?

A. Secondary alcohol by S_N1

B. Tertiary alcohol by S_N2

C. Secondary alcohol by S_N2

D. Tertiary alcohol by S_N1

Answer: D

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72. Ethyl cloride reacts with sodium ethoxide to form a compound (A)Which of the following reaction also yields (A) ?

A. $C_2H_5Cl, KOH(\text{alc.}), \Delta$

B. $2C_2H_5OH, \quad \text{conc.} \quad H_2SO_4, 140^\circ C$

C. $C_2H_5Cl, Mg(\text{dry ether})$

D. $C_2H_2, \quad \text{dil.} \quad H_2SO_4, HgSO_4$

Answer: B

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73. 

Identify A and B

A. Phenol, acetone

B. Phenol, acetaldehyde

C. Benzoic acid, acetone

D. Benzaldehyde, ethanol

Answer: D

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74. The cleavage of an aryl-alkyl ether with cold HI gives

A. alkyl iodide and water

B. aryl iodide and water

C. alkyl iodide, aryl iodide and water

D. phenol and alkyl iodide

Answer: D

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75. 

The major product A is

A. 

B. 

C. 

D. 

Answer: B

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

A. 1° alcohol

B. 2° alcohol

C. 3° alcohol

D. Allyl alcohol

Answer: C

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77. Hydroboration oxidation of 4-methyl octene would give

A. 4-methyl octanol

B. 2-methyl decane

C. 4-methyl heptanol

D. 4-methyl-2-octanone

Answer: A

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78. Acid catalysed hydration of alkenes except ethene leads to the formation of

A. mixture of secondary and tertiary alcohols

B. mixture of primary and secondary alcohols

C. secondary or tertiary alcohol

D. primary alcohol

Answer: C

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79. The function of $ZnCl_2$ in Lucas test for alcohols is

A. to act as acid catalyst and react with HCl to form H_2ZnCl_4

B. to act as base catalyst and react with $NAOH$ to form $Na_2Zn(OH)_4$

C. to act as amphoteric catalyst

D. to act as neutral catalyst

Answer: A

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80. Which one of the following is most acidic ?

A. $Cl - CH_2 - CH_2OH$

B. 

C. 

D. 

Answer: B

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81. Consider the following reaction,

$C_2H_5OH + H_2SO_4 \rightarrow$ Product

Among the following which one cannot be formed as a product under any coditions?

A. Ethyl hydrogen sulphate

B. Ethylene

C. Acetylene

D. Diethyl ether

Answer: C

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82. Compound $Ph - O - \overset{O}{\overset{||}{C}} - Ph$ can be prepared by the reaction of _____.

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 nad benzaldehyde in the presence of palladium

Answer: B

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83. Which one of the following compounds will not react with CH_3MgBr ?

A. Ethyl acetate

B. Acetone

C. Dimethyl ether

D. Ethanal

Answer: C

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84. $R - CH_2 - CH_2OH$ can be converted into RCH_2CH_2COOH the correct sequence of reagent is:

A. PBr_2, KCN, H_3O^+

B. $PBr_3, KCN, H_2/P^+$

C. KCN, H_3O^+

D. HCN, PBr_3, H_3O^+

Answer: A

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85. Among the following compounds which can be dehydrated very easily is-

A. $CH_3CH_2CH_2CH_2CH_2OH$

B. $CH_3CH_2CH_2\overset{OH}{\overset{|}{C}}HCH_3$

C. $CH_3CH_2\overset{\overset{CH_3}{|}}{\underset{\underset{OH}{|}}{C}}CH_2CH_3$

D. $CH_3CH_2\underset{\underset{CH_3}{|}}{CH}CH_2CH_2OH$

Answer: C

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86. In the following reaction which bonds are cleaved?

$$CH_3CH_2-\underset{\text{I}}{\overset{\overset{O}{||}}{O}}\overset{q}{\downarrow}-O\overset{p}{\downarrow}-H+CH_3CH_2\underset{\text{II}}{\overset{s}{\downarrow}}-O\overset{r}{\downarrow}-H$$

A. bond p of I and s of II

B. bond q of I and r of II

C. bond p of I and r of II

D. bond q of I and s of II

Answer: B

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87. Consider the following reaction,

A. 

B. 

C. 

D. 

Answer: B

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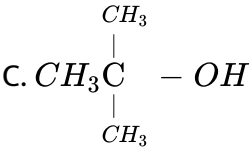
88. 

A. $CH_3\underset{\underset{CH_3}{|}}{CH}CH_2OH$

B. $CH_3CH_2CH_2CH_2OH$

C. 

D. No reaction

Answer: C

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89. The best method to prepare cyclohexene from cyclohexanol is by using

A. conc. $HCl + ZnCl_2$

B. conc. H_3PO_4

C. HBr

D. conc. HCl

Answer: B

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90. 

In the above dehydration reaction $.^{18}C$ will be in

A. H_2O

B. A

C. Both (a) and (b)

D. None of the above

Answer: A

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91. $CH_2 = \underset{\underset{OH}{|}}{CHCHCH_2CH_2OH} \xrightarrow{MnO_2} A$, A is

A. $CH_2 = \underset{\underset{O}{||}}{Ch}CCH_2CH_2OH$

B. $CH_2 = \underset{\underset{OH}{|}}{Ch}CHCH_2CHO$

C. $CH_2 = \underset{\underset{O}{||}}{Ch}CCH_2CHO$

D. $CH_2 = Ch\underset{\underset{O}{||}}{C}CH_2\overset{\overset{O}{||}}{C}OH$

Answer: A

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92. Two aromatic compounds having formula C_7H_8O which are easily identified by $FeCl_3$ solution test (violet colouration) are ,

A. o-cresol and benzyl alcohol

B. m-cresol and p-cresol

C. o-cresol and p-cresol

D. methyl phenyl ether and benzyl alcohol

Answer: A

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93.

Select the schemes A, B C out of

I. acid catalysed hydration

II. HBO

III. Oxymercuration-demercuration

A. I in all cases

B. I, II and III

C. II, III and I

D. III, I and II'

Answer: C

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94. The major product obtained on interaction of phenol with sodium hydroxide and carbon dioxide is :

A. benzoic acid

B. salicylaldehyde

C. salicylic acid

D. phthalic acid

Answer: C

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95. Ester $A(C_4H_8O_2) + \underset{(2\text{ parts})}{CH_3MgBr} \xrightarrow{H_3O^+} \underset{(\text{alcohol B})}{C_4H_{10}O}$

Alcohol B reacts fastest with Lucas reagent. Hence, A and B respectively are

A. $CH_3\overset{\overset{O}{||}}{C}OC_2H_5, (CH_3)_3COH$

B. $H\overset{\overset{O}{||}}{C}OC_3H_7, (CH_3)_2CHOH$

C. $CH_3\overset{\overset{O}{||}}{C}OC_2H_5, (CH_3)_2CHOH$

D. $\overset{O}{\overset{||}{H}}COC_3H_7, (CH_3)_3COH$

Answer: A

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96. Which of the following compound would not evolve CO_2 when treated with $NAHCO_3$ solution ?

A. Salicylic acid

B. Phenol

C. Benzoic acid

D. 4-nitrobenzoic acid

Answer: B

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97. $CH_3 - \underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}} - \underset{\underset{OH}{|}}{CH}CH_3 \xrightarrow{\text{Conc. } H_2SO_4} \text{A(predominant)}$. A is

A. $(CH_3)_3CCH = CH_2$

B. $(CH_3)_2C = C(CH_3)_2$

C. $CH_2 = \underset{\underset{CH_3}{|}}{C}CH_2CH_2CH_3$

D. None of these

Answer: B

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98. Phenol is heated with CCl_4 and alkaline KOH when salicylic acid is produced. The reaction is known as

A. Friedel-Craft reaction

B. Diels-Alder reaction

C. Reimer-Tiemann reaction

D. Wittig reaction

Answer: C

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99. Which of the following would yield a secondary alcohol after the indicated reaction, followed by hydrolysis if necessary?

A. $LiAlH_4 +$ at ketone

B. $CH_3CH_2MgBr +$ an aldehyde

C. 2-butene + aqueous H_2SO_4

D. All of the above

Answer: D

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100. Phenol on reaction with $CHCl_3$ and $NaOH$ give salicylaldehyde. Intermediate of this reaction is

A. carbocation

B. carbanion

C. radical

D. carbene

Answer: D

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101. In the presence of dry HCl gas, CH_3CHO condenses with C_2H_5OH to give

A. aldol

B. ethyl acetate

C. acetal

D. polymer

Answer: C

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102. In the reaction ,

The products are

A. 

B. 

C. 

D. 

Answer: D

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103. Which one of the following reaction would produce secondary alcohol?

A. $C_6H_6\overset{\overset{O}{||}}{C}CH_3 \xrightarrow{CH_3MgBr, H^+}$

B. $C_6H_5\overset{\overset{O}{||}}{C}CH_3 \xrightarrow{LiAlH_4H^+}$

C. $CH_3CHO \xrightarrow{LiAlH_4, H^+}$

D. $CH_3\overset{\overset{O}{||}}{C}CH_3 \xrightarrow{OH^\ominus, Br_2}$

Answer: B

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Mht Cet Corner

1. Isopropyl methyl ether when treated with cold hydrogen iodide gives

A. isopropyl iodide and methyl iodide

B. isopropyl alcohol and methyl idoide

C. isopropyl alcohol and methyl alcohol

D. isopropyl iodide and methyl alcohol

Answer: B

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2. Which among the following phenolic compounds is most acidic in nature?

A. p-aminosphenol

B. Phenol

C. m-nitrophenol

D. p-nitrophenol

Answer: D

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3. Name the catalyst used in commerical method of preparation of phenol.

A. Silica

B. Calcium phosphate

C. Anhydrous aluminium chloride

D. Cobalt naphthenate

Answer: D

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4. Which of the following compounds has highest boiling point ?

A. propan-1-ol

B. n-butane

C. Chloroethane

D. Propanal

Answer: A

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5. Reaction of which among the following ethers with Hl in cold leads to formation of methyl alcohol?

A. Ethyl methyl ether

B. Methyl propyl ether

C. Isopropyl methyl ether

D. Tert-butyl methyl ether

Answer: D

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6. Select of the ether among following that yields methanol as one of the products on reaction with cold hydroiodic acid

A. 1-methoxy butane

B. 1-methoxy butane-2-methyl propane

C. 2-methoxy-2-methyl propane

D. methoxy benzene

Answer: C

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7. The order of stability of the following tautomeric compound is

I. $CH_2 = \overset{OH}{\overset{|}{C}} - CH_2 - \overset{O}{\overset{||}{C}} - CH_3$

II. $CH_3 - \overset{O}{\overset{||}{C}} - CH_2 - \overset{O}{\overset{||}{C}} - CH_2$

III. $CH_3 - \overset{OH}{\overset{|}{C}} = CH - \overset{O}{\overset{||}{C}} - CH_3$

A. I gt II gt III

B. III gt II gt I

C. II gt I gt III

D. II gt III gt I

Answer: B

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8. The nature of 2,4,6-trinitro phenol is

A. neutral

B. basic

C. acidic

D. weak basic

Answer: C

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9. Which of the following organic compounds could not be dried by anhydrous $CaCl_2$?

A. Ethanol

B. Benzene

C. Chloroform

D. Ethyl acetate

Answer: A

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10. Which of the following dissolves in ionic solvents?

A. C_6H_6

B. CH_3OH

C. CCl_4

D. C_5H_{12}

Answer: B

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11. Phenol gives characteristic colouration with

A. iodine solution

B. bromine water

C. aqueous $FeCl_3$ solution

D. ammonium hydroxide

Answer: C

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12. 1 mole alcohol reacts with Na to give what weight of hydrogen?

A. 1 g

B. 2 g

C. 3 g

D. 3.5 g

Answer: A

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13. The relative ease of dehydration of alcohols follows following order :

A. $1^{\circ} > 2^{\circ} > 3^{\circ}$

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

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

D. $1^{\circ} > 3^{\circ} > 2^{\circ}$

Answer: B

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14. Ethanolic KOH gives

A. dehalogenation reactions

B. dehydrogenation reaction

C. dehydrohalogenation reactions

D. substitution reactions

Answer: C

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15. Which of the following compounds is optically active ?

A. Butanal

B. Butanol

C. Butan-2-ol

D. 2-methyl propane-2-ol

Answer: C

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16. Which alcohol of molecular formula C_4H_9OH cannot be obtained by the reduction of carbonyl compound?

A. 2-methyl propan-1-ol

B. 2-methyl propan-2-ol

C. butanol

D. butane-2-ol

Answer: B

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17. Ether and alcohol are ..... Isomers.

A. chain

B. position

C. functional

D. not isomers

Answer: C

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18. The IUPAC name of $\begin{matrix} H_3C-CH-C_3H_7 \\ | \\ OC_3H_7 \end{matrix}$ is

A. 4-propoxy pentane

B. pentyl-propyl ether

C. 2-propoxy pentane

D. 2-pentoxy propane

Answer: C

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19. Phenols are more acidic than alcohols because

A. phenoxide ion is stabilised by resonance

B. phenols are more soluble in polar solvents

C. phenoxides ions do not exhibit resonance

D. alcohols do not lose H atoms at all

Answer: A

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20.  is the anhydride of

A. 1, 2-butane diol

B. 2, 2-butane diol

C. 2, 3-butane diol

D. 1, 1-butane diol

Answer: C

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21. An organic compound 'A' having molecular formula C_2H_3N on reduction gave another compound 'B' Upon treatment with nitrous acid gave ethyl alcohol and on warming with chloroform and alcoholic KOH, it formed an offensive smelling compound 'C'. The compound 'C' is :

A. $CH_3CH_2CH_2$

B. $CH_3CH_2N \Longrightarrow C$

C. $CH_3C \equiv N$

D. $CH_3CH_2.OH$

Answer: B

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22. Which of the following compounds is optically active?

A. 1-butanol

B. Isopropyl alcohol

C. Acetaldehyde

D. 2-butanol

Answer: D

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23. 2, 4, 6-trinitrophenol is

A. tear gas

B. picric acid

C. chloropicrin

D. All of these

Answer: B

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24. Dimethyl ether and ethyl alcohol are

A. metamers

B. homologues

C. functional isomers

D. position isomers

Answer: C

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25. Tertiary alcohols (3°) having at least four carbon atoms upon drastic oxidation yeild carboxylic acid with

A. one carbon atom less

B. two carbon atoms less

C. three carbon atoms less

D. All of these

Answer: B

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26. Which of the following processes is concentrated with the formation of ethers?

A. Wurtz synthesis

B. Williamson synthesis

C. Kolbe synthesis

D. Hofmann synthesis

Answer: B

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27. Propylene on hydrolysis with sulphuric acid forms

A. n-propyl alcohol

B. isopropyl alcohol

C. ethyl alcohol

D. butyl alcohol

Answer: B

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28. Give IUPAC name of the following compounds

$CH_3 - \underset{\underset{CH_3}{|}}{CH} - \underset{\underset{OH}{|}}{CH} - CH_3$ is

A. 3-methyl-2-butanol

B. 2-methyl-3-butanol

C. iso-propanol

D. None of the above

Answer: A

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29. Boiling point of alcohol is comparatively higher than that of corresponding alkane due to

A. intermolecular hydrogen bonding

B. intramolecular hydrogen bonding

C. volatile nature

D. None of the above

Answer: A

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30. When phenol reacts with chloroform and an alkali, the compound formed is salicylaldehyde. If pyrene is used in place of chloroform, the product obtained is :

A. salicylic acid

B. cyclohexanol

C. phenolphthalein

D. salicylaldehyde

Answer: A

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31. Which of the following has lowest boililng point?

A. p-nitrophenol

B. m-nitrophenol

C. o-nitrophenol

D. Phenol

Answer: C

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32. Phenol is

A. carboxylic acid

B. carbolic acid

C. aliphatic acid

D. aromatic carboxylic acid

Answer: B

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33. Ethoxy ethane react with dil. H_2SO_4 gives

A. C_2H_5OH, CH_3HSO_4

B. C_2H_5OH

C. $CH_3OH, C_2H_5HSO_4$

D. CH_3OH, C_2H_4

Answer: B

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