ETERNAL CAREER CLASSES

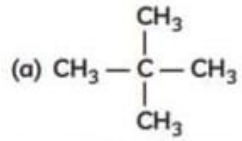
SUBJECT : CHEMISTRY | CLASS : XII | FULL MARKS : 40

NAME : …….. | BOARD TEST : 15 | DATE : 20.12.2024

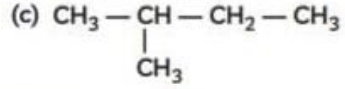
SECTION - A

Single answer type question. Attempt any fourteen question :- **Marks : 1**× 14 = 7

1. Which of the following isomer of pentane (C_3H_{12}) will give three isomeric monochlorides on photochemical chlorination ?

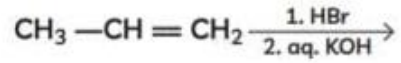


(b) $CH_3CH_2CH_2CH_2CH_3$

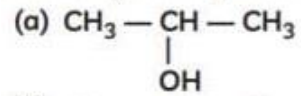


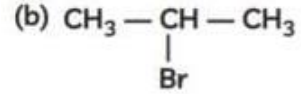
(d) All of the above

2. Major product obtained on reaction of 3-Phenyl propene with HBr in presence of organic peroxide is:
   (a) 3 - phenyl -1- bromopropane
   (b) 1 - phenyl-3- bromopropane
   (c) 1 - phenyl-2-bromopropane
   (d) 3 - phenyl -2- bromopropane
3. The reaction of toluene with Cl_2 in presence of $FeCl_3$ gives ' X ' while the of toluene with Cl_2 in presence of light gives ' Y '. Thus ' X ' and ' Y ' are:
   (a) X = benzyl chloride Y = 0 and p − chlorotoluene
   (b) X = m - chlorotoluene Y = p − chlorotoluene
   (c) X = 0 and p-chlorotoluene Y = trichloromethylbenzene
   (d) X = benzyl chloride, Y = m-chlorotoluene
4. Retention of configuration is observed in:
   (a) $SN1$ reaction
   (b) $SN2$ reaction
   (c) Neither $SN1$ nor $SN2$ reaction
   (d) $SN2$ reaction as well as $SN1$ reaction
5. Consider the following reaction



The major end product is:



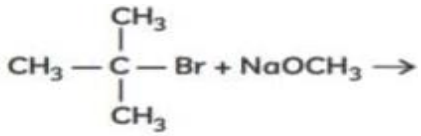


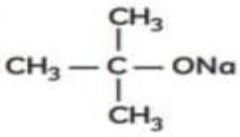
(c) $CH_3 - CH_2 - CH_2 - OH$

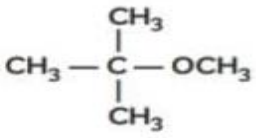
(d) $CH_3 - CH_2 - CH_2 - Br$

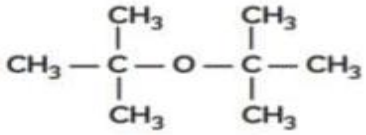
6. $CH_3CH_2CH_2Cl \xrightarrow{alcKOH} B \xrightarrow{HBr} C \xrightarrow{Na/ether}$ D in this reaction D is :
   (a) Propanone (b)Hexane
   (c) 2,3- dimethylbutane (d) Allylic bromide

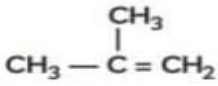
7. The conversion of an alkyl halide into an alcohol by aqueous NaOH is classified as:
   (a) A dehydrohalogenation reaction
   (b) A substitution reaction
   (c) An addition reaction
   (d) A dehydration reaction
   In the following questions a statement of Assertion (A) followed by a statement of Reason (R) is given. Choose the correct answer out of the following choices.
   (a) Both (A) and (R) are true and (R) is the correct explanation of (A).
   (b) Both (A) and (R) are true but (R) is not the correct explanation of (A).
   (c) (A) is true but (R) is false.
   (d) (A) is false but (R) is true.
8. Assertion (A): Chlorobenzene is resistant to electrophilic substitution reaction.
   Reason (R): C − Cl bond in chlorobenzene acquires partial double bond characters due to resonance.
   (a) Both (A) and (R) are true and (R) is the correct explanation of (A).
   (b) Both (A) and (R) are true but (R) is not the correct explanation of (A).
   (c) (A) is true but (R) is false.
   (d) (A) is false but (R) is true.
9. Alkyl halides which will undergo SN1 reaction most readily is:
   (a) $(CH_3)_3C - Cl$
   (b) $(CH_3)_3 - C - Br$
   (c) $(CH_3)_3C - F$
   (d) $(CH_3)_3C - I$
10. Which of the following reactions are feasible ?
   (a) $CH_3CH_2Br + Na^+O - C(CH_3)_3 \rightarrow CH_3CH_2O - C(CH_3)_3$
   (b) $(CH_3)_3C - Cl + Na^+O - CH_2\,CH_3 \rightarrow CH_3CH_2 - O\,C(CH_3)_3$
   (c) Both (a) and (b)
   (d) Neither (a) nor (b)
11. Williamson's synthesis of preparing dimethyl ether is an:
   (a) SN_1 reaction
   (b) Elimination reaction
   (c) SN_2 reaction
   (d) Nucleophilic addition reaction
   In the following question, a statement of assertion (A) followed by a statement of Reason (R) is given. Choose the correct answer out of the following choices.
   (a) Both (A) and (R) are true and (R) is the correct explanation of (*A*).
   (b) Both (A) and (R) are true and (R) is not the correct explanation of (*A*).
   (c) (A) is correct but (R) is wrong.
   (d) (A) is wrong but (R) is correct.
12. Major product formed in the following reaction



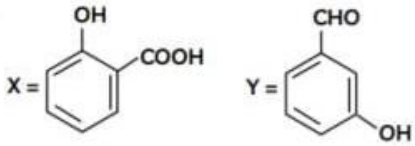
(a)


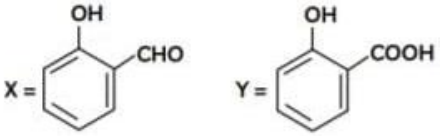
(b)


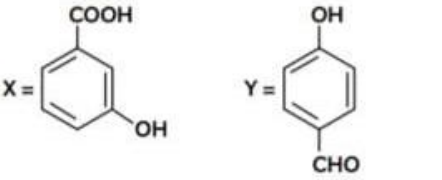
(c)


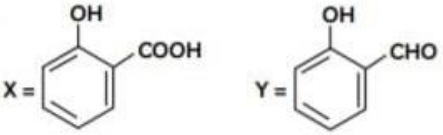
(d)


13. The products X and Y are :

(a)


(b)


(c)


(d)


14. Reagent used for the conversion of ethanol to ethanal is:
    (a) H_2/Ni (b) $KMnO_4$
    (c) LiA_lH_4 (d) PCC
15. What would be the reactant and reagent used to obtain 2, 4-dimethyl pentan-3-ol?
    (a) Propanal and propyl magnesium bromide
    (b) 3-Methylbutanal and 2-methyl magnesium iodide
    (c) 2-Dimethylpropanone and methyl magnesium iodide
    (d) 2-Methylpropanal and isopropyl magnesium iodide
16. Phenol and ethanol may be distinguished with which reagent?
    (a) NaOH(aq.) (b) Neutral $FeCl_3$
    (c) H_2/Ni (d) $NaHCO_3$
17. 17. Assertion (A): An ether is more volatile than an alcohol of comparable molecular mass.
    Reason (R): Ethers are polar in nature.

In the following question, a statement of assertion (A) followed by a statement of Reason (R) is given. Choose the correct answer out of the following choices.
(a) Both (A) and (R) are true and (R) is the correct explanation of (A).
(b) Both (A) and (R) are true and (R) is not the correct explanation of (A).
(c) (A) is correct but (R) is wrong.
(d) (A) is wrong but (R) is correct.

18. 18. The strongest acid among the following is:
(a) Phenol (b) Benzyl alcohol
(c) m-Chlorophenol (d) Cyclohexanol
19. The C − O − H bond angle in alcohol is:
(a) slightly greater than 109∘28 '.
(b) slightly less than 109∘28′
(c) slightly greater than 120∘.
(d) slightly less than 120∘
20. $CH_3 - CH = CH - CH_2 - OH \longrightarrow PCC$
the product formed is:
(a) $CH_3 - CHO$ and CH_3CH_2OH
(b) $CH_3 - CH = CH - COOH$
(c) $CH_3 - CH = CH - CHO$
(d) $CH_3 - CH_2 - CH_2 - CHO$

SECTION - B

Short answer type question. Attempt any two question :- **Marks : 3**× 2 = 6

21. A.Give reason for the following:
Thionyl chloride method is preferred for preparing alkyl chloride from alcohols.
B.How can you convert the following?
But-1-ene to 1-iodobutane
22. Give reason for the following:
(A) During the electrophilic substitution reaction of haloarenes, para substituted derivative is the major product.
(B) The product formed during $SN1$ reaction is a racemic mixture.
23. A.Write the preparation of phenol from cumene.
B.How can you convert the following?
Sodium phenoxide to o-hydroxybenzoic acid
24. Write the equation for the following reactions:
(A) Salicylic acid is treated with acetic anhydride in the presence of conc. H_2SO_4.
(B) Tert butyl chloride is treated with sodium ethoxide.
(C) Phenol is treated with chloroform in the presence of NaOH.

Long answer type question. Attempt any four question :- **Marks : 5** × 4 = 20

25. A.Carry out the following conversion: Phenol to salicylaldehyde.
B.Carry out the following conversion: Propene to Propanol.
C.Out of t-butyl alcohol and n-butanol, which one will undergo acid catalysed dehydration faster and why?
26. A.Give the mechanism for the formation of ethanol from ethene.
B.. Give simple chemical tests to distinguisuh between the following pairs of compounds:
(A) Ethanol and phenol
(B) Propanol and 2 - methylpropan - 2 - ol
27. 27. Give reasons for the following:
1.(A) Boiling point of ethanol is higher in comparison to methoxymethane.

(B) $(CH_3)_3C-O-CH_3$ on reaction with HI gives CH_3OH and $(CH_3)_3C-I$ as the main products and not $(CH_3)_3C-OH$ and CH_3I_2

2.Explain the mechanism of dedydration steps of ethanol.

3.Give reason for the following: Phenol is more acidic than ethanol.

28. 1.Write chemical equations when:

(A) Methyl chloride is treated with $AgNO_2$.

(B) Bromobenzene is treated with CH_3Cl in the presence of anhydrous $AlCl_3$.

C. ethyl chloride is treated with aqueous KOH

D.chlorobenzene is treated with CH_3COCl in presence of anhydrous $AlCl_3$.

2.(A) Arrange the isomeric dichlorobenzene in the increasing order of their boiling point and melting

points.

(B) Explain why the electrophilic substitution reactions in haloarenes occur slowly and require more

drastic conditions as compared to those in benzene.

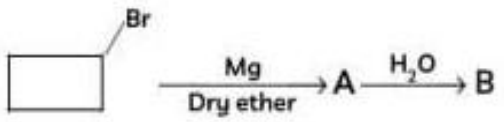
29. 1 A. which isomer of C_3H_{10} gives a single monochloro compound C_5H_9Cl in bright sunlight

B. Arrange the following compounds in increasing order of reactivity towards S_N^2 reactions :

2. Bromopentane, 1 – Bromopentane, 2 – Bromo – 2 – methylbutane

C. Why p – dichlorobenzene has higher melting point than those of ortho – and meta – isomers ?

D Identify A and B in the following :



2. Out of chlorobenzene and benzyl chloride, which one gets easily hydrolysed by aqueous NaOH and why?

30. A.Give reason for the following: *p*-dichlorobenzene has higher melting point than that of ortho or meta isomer.

B.Write the structure of an isomer of compound C4H9Br which is most reactive towards SN1 reaction.

C.Explain the following:

Alkyl halides, though polar, are immiscible with water.

******