



INDIAN SCHOOL MUSCAT

SECOND PERIODIC TEST

CHEMISTRY

CLASS: XII

Sub.Code: 043

Time Allotted: 50mts.

16.05.2023

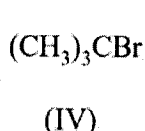
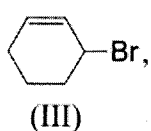
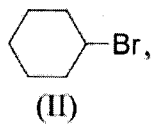
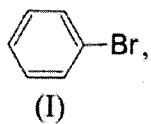
Max .Marks: 20

GENERAL INSTRUCTIONS:

- All questions are compulsory.
- Mark for each question is indicated against it.

Following questions are multiple choice type carrying 1 mark each:

- Which isomer of $C_5H_{11}Cl$ will have the lowest boiling point? 1
 a) n-pentyl chloride b) Isopentylchloride c) Neopentylchloride d) Sec-pentyl chloride
- Write the name of the product formed when Ethyl bromide is treated with Mg in dry ether followed by hydrolysis. 1
 a) Butane b) Ethane c) Ethene d) propane
- Identify the major product formed when Chloromethylcyclohexane on reaction with alcoholic KOH. 1
 a)Methylcyclohexene b)2-Methylcyclohexene c)Methylenecyclohexane d)3-methylcyclohexene
- Which reagents would you use to carry out the reaction ? 1
 Methyl benzene \rightarrow 1-chloro-4-methyl benzene?
 a) Cl_2 , light and heat b) Cl_2 , $FeCl_3$ c) $SOCl_2$ d) CH_3Cl , $AlCl_3$
- Order of hydrolysis of the following in increasing order is : 1



- $I < II < III < IV$ b) $I < IV < III < II$ c) $IV < III < II < I$ d) $I < II < IV < III$

In the following questions, a statement of assertion (A) followed by a statement of reason (R) is given. Select the most appropriate answer from the options given below:

- Both A and R are true and R is the correct explanation of A
- Both A and R are true but R is not the correct explanation of A.
- A is true but R is false.

(d) A is false but R is true.

(e) Both A and R are false

6. Assertion: Aryl iodides can be prepared by reaction of arenes with iodine in the presence of an oxidising agent. 1

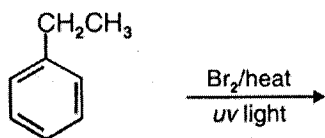
Reason: Oxidising agent oxidises I_2 into HI .

7. Assertion: Chloroethane is more reactive towards S_N2 than bromoethane. 1

Reason: C-Br bond is weaker than C-Cl bond.

Answer the following:

8. Write a test to distinguish between chlorobenzene and benzyl chloride. 1
9. Write the IUPAC name of $C_6H_5CH(Br)CH_2C(CH_3)_3$. 1
10. Explain the Zaitsev rule. 1
11. Complete the following : 1



12. Give the equations for the following : 2
- a) Friedel-Crafts alkylation of chlorobenzene
- b) Wurtz reaction
13. Convert: 2
- a) Toluene to benzyl alcohol
- b) Chloromethane to Ethane nitrile
14. Give reasons for the following: 2
- a) Chloroform is kept in dark coloured bottles.
- b) Allyl and benzyl halides undergo S_N1 mechanism.
15. An optically active compound having molecular formula $C_7H_{15}Br$ reacts with aqueous KOH to give a racemic mixture of products. Identify the compound and write the mechanism involved for the reaction. 3



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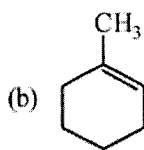
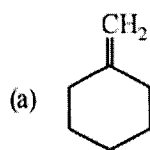
GENERAL INSTRUCTIONS:

a) All questions are compulsory.

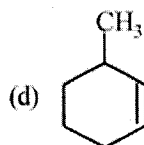
b) Mark for each question is indicated against it

Following questions are multiple choice type carrying 1 mark each:

- The alkyl halide that undergoes S_N1 reaction more readily: 1
(a) Ethyl bromide (b) Isopropyl bromide (c) Vinylbromide (d) n-Propylbromide
- Chlorobenzene reacts with Mg in dry ether to give a compound (A) which further reacts with ethanol to yield: 1
(a) Phenol (b) Ethylbenzene (c) Benzene (d) Phenyl ether
- Which of the following will have the maximum dipole moment? 1
(a) CH_3F (b) CH_3Cl (c) CH_3Br (d) CH_3I
- In the reaction with HCl, an alkene reacts in accordance with the Markovnikov's rule, to give a product 1-chloro-1- methylcyclohexane. The possible alkene is : 1



(c) (a) and (b)



- Identify the major product formed when 2-Bromopentane undergoes dehydrohalogenation reaction. 1
(a) Pent-1-ene (b) but-1-ene (c) 2-methylpentene (d) Pent-2-ene

In the following questions, a statement of assertion (A) followed by a statement of reason (R) is given. Select the most appropriate answer from the options given below:

- (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.
- (e) Both A and R are false

6. Assertion: $\text{C}_6\text{H}_5\text{CHC}_6\text{H}_5\text{Br}$ is less reactive than $\text{C}_6\text{H}_5\text{CH}(\text{CH}_3)\text{Br}$ in $\text{S}_{\text{N}}1$ reactions. 1

Reason: Reactivity towards $\text{S}_{\text{N}}1$ mechanism increases from 1° to 3° alkyl halide.

7. Assertion: The presence of $-\text{NO}_2$ group at ortho or para position increases the reactivity of haloarenes towards nucleophilic substitution reactions. 1

Reason: NO_2 group, being an electron withdrawing group decreases the electron density on benzene ring.

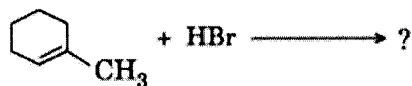
Answer the following:

8. What are Freons? Give an example 1

9. Give the chemical test to distinguish the following : 1
Chlorobenzene and cyclohexylchloride.

10. Write the IUPAC name of the following $\text{C}_6\text{H}_5\text{CH}(\text{CH}_3)\text{CH}_2\text{CHC}/\text{CH}_3$ 1

11. Complete the following: 1



12. Convert : 2

- (a) Bromomethane to ethanoic acid
- (b) Chlorobenzene to phenol

13. Account for the following: 2

- (a) Haloalkanes though polar are insoluble in water.
- (b) Chlorobenzene is extremely less reactive towards a nucleophilic substitution reaction.

14. Give the equations for the following 2

- (a) Fittig reaction
- (b) Friedel-Craft's Alkylation of Chlorobenzene

15. An optically active compound having molecular formula $\text{C}_4\text{H}_9\text{Br}$ undergoes inversion of configuration when reacts with aqueous KOH. Identify the compound and write the mechanism involved for the reaction. 3



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GENERAL INSTRUCTIONS:

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Following questions are multiple choice type carrying 1 mark each:

- Chlorobutane reacts with Mg in dry ether to give a compound (A) which further reacts with water to yield: 1
 (a) Butanol (b) Propane (c) Butane (d) Propanol
- Identify the major product formed when 2-Bromopentane undergoes dehydrohalogenation reaction. 1
 (a) Pent-1-ene (b) but-1-ene (c) 2-methylpentene (d) Pent-2-ene
- In the reaction with HCl, an alkene reacts in accordance with the Markovnikov's rule, to give a product 1-chloro-1- methylcyclohexane. The possible alkene is : 1

(a)

(b)

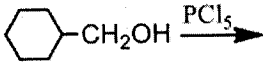
(c) (a) and (b)

(d)
- Which reagents would you use to carry out the reaction 1
 Ethyl benzene \rightarrow 1-chloro-4-ethyl benzene?
 (a) Cl_2 , light and heat (b) Cl_2 , $FeCl_3$ (c) $SOCl_2$ (d) C_2H_5Cl , $AlCl_3$
- Which isomer of $C_5H_{11}Cl$ will have highest boiling point? 1
 a) n-pentyl chloride b) Isopentylchloride c) Neopentylchloride d) Sec-pentyl chloride

In the following questions, a statement of assertion (A) followed by a statement of reason (R) is given. Select the most appropriate answer from the options given below:

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- (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.
- (e) Both A and R are false

6. Assertion: S_N1 mechanism is facilitated by polar protic solvents like water, alcohol etc . 1
Reason: Polar protic solvents destabilizes the carbocation formed in S_N1 reaction.
 7. Assertion: Aryl halides cannot be prepared from phenols directly. 1
Reason: C—O bond in phenol has a partial double bond character due to resonance.
- Answer the following:
8. Give the chemical tests to distinguish the following compounds: 1
3-Chloropropene and 1-chloropropene
 9. Write the IUPAC name of $C_6H_5CH_2CH=CHCH_2Cl$ 1
 10. What are Enantiomers? 1
 11. Complete the following : 1


 12. Give the equations for the following 2
(a) Friedel-crafts acylation of bromobenzene
(b) Wurtz-Fittig reaction
 13. Convert: 2
(a) Ethene to nitroethane
(b) Chloroethane to but-1-yne.
 14. Account for the following: 2
(a) Iodination of alkanes require the presence of an oxidizing agent like HNO_3 or HIO_3 .
(b) Reaction of alcohol with thionyl chloride is preferred for the preparation of chloroalkanes.
 15. An optically active compound having molecular formula C_4H_9Br reacts with aqueous KOH 3
to give a racemic mixture of products. Identify the compound and write the mechanism involved for the reaction.