

## CHEMISTRY IN EVERYDAY LIFE

1. What are antagonist, agonist?
2. Name antihistamine which cure acidity. Explain mech.
3. How does Aspirin oct as pain reliever?
4. What are antacids, why  $\text{NaHCO}_3$  not preferred?
5. What are antihistamine give eg?
6. Name drug which is analgesic as well as antipyretic.
7. What are broad spectrum antibiotic. Give eg?
8. What is composition of Dettol and Tincture of iodine?
9. What diseases are cured by chloramphenicol?
10. Why bithional added to soap?
11. What are disinfectant? Give eg.
12. What are anti-fertility drugs? Give eg.
13. What are Tranquilizer? Give three eg.
14. Name medicine which is constituents of sleeping pill.
15. What are bacteriostatic/ bacteriacidal antibiotic?
16. What are artificial sweetner. Why are they preferred for Diabetic patient.
17. Why aspartame not preferred as artificial sweetner in hot food. Which artificial sweetner used at high temp?

18. Why is alitame not preferred as an artificial sweetener?

19. What is the advantage of detergent over soap.

20. Give three types of detergents with examples.

### ALCOHOLS, PHENOLS & ETHERS

Q.1 Write down the structure of the following compounds.

- 1) 3-chloro-4-methylhept-2-enol
- 2) Cyclohexanol
- 3) 2-Methylcyclopentanol
- 4) 1-Ethoxy-2-nitrocyclohexane
- 5) 4-Chloro-2,3-dimethylpentan-1-ol
- 6) 2,5-Dimethylphenol
- 7) Cyclopent-3-enol
- 8) 3,5-Dimethylhexane-1,3,5-triol
- 9) 3-Cyclopropylpentan-3-ol.

Q.2 Draw isomers of  $C_5H_{12}O$ . Classify them as  $1^\circ$ ,  $2^\circ$  alcohol,  $3^\circ$  alcohol.

Q.3 Why does propanol have a higher boiling point than butane.

Q.4 Alcohols are comparatively more soluble in water than hydrocarbons of comparable molecular mass. Explain.

Q.5 Explain hydroboration with an example.

Q.6 Give structure and IUPAC name of monohydric phenols of molecular formula  $C_7H_8O$ .

Q. 7. While separating a mixture of ortho and para nitro phenol by steam distillation. Name isomer which is steam volatile. Give reason.

Q8. Explain —

- (a) Cumene Process
- (b) Kolbe's Reaction
- (c) Dow's Process
- (d) Reimer Tiemann reaction (with mechanism)
- (e) Williamson synthesis.

Q. 9. You are given Benzene, conc  $H_2SO_4$ , NaOH. Use it to make phenol.

Q.10 How will you synthesize.

- Phenol from Aniline
- Pentan - 1 - ol using suitable alkylhalide.

Q.11. Give two reactions to prove acidic nature at phenol compare acidic nature of phenol with ethanol

Q.12. Why are nitrophenols more acidic than ortho methoxy phenol.

Q.13 Explain how does — OH grp attached to carbon of benzene ring activate it towards electro philic substitution reaction.

Q.14 Give equation for following reaction.

- $Rx^n$  of propene with mercuric acetate followed by hydrolysis.
- Oxidation of propan-1-ol with alkaline  $KMnO_4$
- Reaction of phenol with  $Br_2$  in  $CS_2$ .
- Action of Phenol with dil  $HNO_3$
- Phenol with  $CHCl_3 / NaOH$  at 343k
- Phenol with  $Br_2 - H_2O$

Q.15. Convert

- |                            |                  |
|----------------------------|------------------|
| * Propene                  | - Propan -2-ol   |
| * Benzyl chloride          | - Benzyl alcohol |
| * Ethyl Magnesium chloride | - Propan-1-ol    |

* Methyl magnesium bromide	- 2-methyl propan -2-ol
* Formaldehyde	- propanol
* Acetaldehyde	- ISO - propyl alcohol.
* Acetone	- tert butyl alcohol
* Propanol	- Propene
* Propan -2-ol	- Propanone
* Aniline	- Phenol.
* Phenol	- Aspirin
* Phenol	- Salicylaldehyde
* Phenol	- 4 - hydroxy acetophenone
* Phenol	- 1,3,5 - Tribromophenol
* Phenol	- 1,3,5 - trinitro phenol
* Cumene hydro peroxide	- Salicylic Acid
- Ethyl chloride	- Phenol
	- Methoxy ethane

Q. 16 Name reagent to be used for following

- Oxidation of 1<sup>o</sup> Alcohol
- Oxidation of 1<sup>o</sup> Alcohol
- Phenol
- Dehydration of propan -2 -ol
- Butan – 2 –one
- Carboxylic acid
- aldehyde.
- 2,4,6 – tribromo phenol
- Propene
- Butan – 2-ol

Q.17 Chemically differentiate

- Propan -2-ol Propan -1-ol
- Methanol and ethanol.
- Ethanol and diethyl ether
- Ethanol and phenol
- Phenol and acetic acid
- Pentan -2 ol and pentan -3-ol

-Formic acid and Acetic acid

Q.18. Give reason

- alcohol are weak acid
- O nitro phenol is steam volatile whereas. Pnitro phenol is not.
- Phenol is acidic
- Phenol is more acidic than phenol
- Phenol cannot undergo protonation easily
- Methanol is more polar than phenol
- Phenol cannot undergo protonation easily
- Phenol is sparingly soluble in water but readily soluble in NaOH
- Alcohol is amphoteric
- Ethanol has higher boiling point than Methoxy methane.

Q.19. Write name of reagent and equation for prep of

- 1 – Propoxy propane
- Ethoxy benzene
- 2Methyl -2 methoxy propane
- 1 – methoxy propane

Q.20 Write down. Limitation of Williamson synthesis.

Q.21 How is propene synthesized from propan -1 –ol.

Q.22 Preparation of ethers by acid dehydration of secondary and tertiary alcohol is not a suitable method. Give reason.

Q.23. Write product obtained when HI reacted with.

- 1- Propoxy propane

- Methoxy benzene

- Benzyl ethyl ether.

Q.24 Explain, the fact in aryl ether

(i) alkoxy grp activate the benzene ring toward  $E^+$  substitution  $RX^n$  to ortho and para position.

Q.25. Write reaction for following rx<sup>n</sup> –

- Friedel craft reaction – alkylation's in anisole.

- Nitration of anisole

- Bromination of Anisole in ethanoic acid medium

-Friedel craft acetylation of anisole.

Aldehyde, ketone and carboxylic acid

Q.1 Write short note on –

1) Rosenmund

2) Wolff kishner

3) Aldol condensation

4) Cannizzaro

5) Clemmensen

6) HVZ

7) Tollen's reagent

8) Fehling solution

Q.2. Give General mechanism of Nucleophilic addition of aldehyde and ketone.

Q.3 Explain –

- reaction of aldehyde, ketone with HCN has to be done in acidic medium.

- Cyclohexanone react with HCN but 2,6,6 – Trimethyl cyclo hexanone cannot react with HCN.

- Reaction of aldehyde, ketone with ammonia derivative is carried out in carefully controlled PH medium.

Q.4 What is meaning of following terms –

- |                  |                      |          |
|------------------|----------------------|----------|
| a) Cyanohydrin   | d) Hemiacetal        | g) aldol |
| b) Acetal        | e) Ketal             | h) oxlme |
| c) Semicarbazone | f) 2,4 DNPderivative | i) Imine |

Q.5 Draw structure of –

- i) 3 – Methyl butanal
- ii) P- Methyl benzaldehyde
- iii) 4 – nitro propiophenone
- iv) P, P – dihydroxy benzophenone
- v) P- nitro propiophenone
- vi) 4 – Methyl pent – 3 en – 2 – en
- vii) 3( 3- Bromo phenyl) hexanoic acid
- viii) Hex – 2 – en – 4- y noic acid
- ix) 4- Chloro benzaldehyde

Q6 Draw the structure of following dervatives

- 2, 4 – dinitrophenyl hydrazone of benzaldehyde

- Cyclopropanone oxime.
- Acetaldehyde dimethyl acetal (Acetal of Acetaldehyde and methanol)
- Semicarbazone of cyclobutanone.
- Ethylene ketal of hexan – 3- one
- Methyl hemiacetal of formaldehyde.

Q.7 Predict product obtained when cyclohexane Carbaldehyde react with.

- Ph Mg Br and  $H_3O^+$                       - Zn - Hg | HCl.
- Tollen's reagent
- Semicarbazide and weak Acid.
- Excess of ethanol and acid

Q.8 Find Which compound undergo aldol and which undergo cannizzaro reaction And which none. Write product also.

- Methanal                                      - 2, 2 – dimethyl butanal.
- benzaldehyde                                - 2- Methyl pentanal.
- Cyclo hexanal                                - Benzophenone
- Phenyl acetaldehyde                      - 1- Phenyl prononone
- Butanal.

Q9. How will you concert Acetaldehyde into.

- Butan - 2- one
- Butane -1, 3 –diol
- But -2- enal
- But -2- enoic acid

- Butanol
- Butanoic acid

Q.10. Write possible aldol condensation product. When propanal and Butanal subjected to aldol reaction.

Q.11 An organic compound with molecular formula.  $C_9H_{10}O$  form 2, 4 – DNP, reduces Tollen's undergo cannizzaro reaction. On Vigorous Oxidation. it gives 1, 3- benzene dicarboxylic acid. Identify and name the compound.

Q12. Arrange the following compounds in the increasing order of property indicated –

- Acetaldehyde, acetone, Dtert butyl ketone, methyl ter butyl ketone (nucleophilic addition).
- Benzoic acid, m-Nitrobenzoic acid, 3, 4 – Dinitro benzoic acid, 4- Methoxy benzoic acid (Acidic strength).

Q.13 Chemically differentiate

- a) – Propanal and propanone
- b) – Phenol and Carboxylic acid
- c) – Benzamide and P- Amino benzoic acid
- d) ethanal and propanal
- e) Benzoic acid and ethyl benzoate
- f) – Propanal and diethyl ether.

Q14. How can you convert benzene into.

- Methyl benzoate
- M- nitro benzoic acid
- P nitro benzoic acid

- Phenyl acetic acid
- P nitro benzaldehyde.

Q.15 Convert

- |                |                                       |
|----------------|---------------------------------------|
| - propanone    | - Propene                             |
| - Propanal     | - Butanone                            |
| - ethanal      | - 3- hydroxy butanal                  |
| - Benzaldehyde | - benzophenone                        |
| - Benzaldehyde | - 1- Phenyl propan – ol               |
| - Benzaldehyde | - $\alpha$ hydroxy phenyl acetic acid |

Q.16 Compare acidic nature of carboxylic acid and phenol.

ALKYL & ALKYL HALIDES

Q.1. Among the isomeric alkanes of molecular formula  $C_5H_{12}$ , identify the one which on photochemical chlorination yields.

- (i) A single monochloride                      (ii) Three isomeric monochloride
- (iii) Four isomeric monochloride

Q.2. How will you carry out the following conversions?

- |                               |                                 |
|-------------------------------|---------------------------------|
| (a) Ethanol to Butane         | (b) Ethanol to But-1-yne        |
| (c) Toluene to Benzyl alcohol | (d) Propene to 1- Nitro propane |
| (e) Benzene to Biphenyl       | (f) But-1-ene to But-2-ene      |
| (g) propene to Propyne        |                                 |

Q.3. Explain:-

- (a) The dipole moment of chlorobenzene is lower than that of cyclohexyl chloride?
- (b) Alkyl halides though polar are immiscible with water
- (c) Grignard reagents should be prepared under anhydrous condition.
- Q.4. What happens when?
- (1) n-butyl chloride is treated with alcoholic KOH
  - (2) Chlorobenzene is subjected to hydrolysis
  - (3) Methyl chloride is treated with AgCN
- Q.5. Primary alkyl halide 'A'  $C_4H_9Br$  reacted with alcoholic KOH to give compound B. B is reacted with Br to give C which is an isomer of A. When A is reacted with sodium metal it gives compound  $D_1 (C_9H_{18})$  which is different from the compound formed when n-butyl bromide is reacted with sodium.
- Give the structural formula of A and write its equations for all the reactions.
- Q.6. out of  $C_6H_5-CH_2Cl$  and  $C_6H_5-CHCl-C_6H_5$ , which is more easily hydrolysed by aqueous KOH
- Q.7. Why p-Dichlorobenzene has higher M.P. and solubility than those of o- and m-Isomers. Discuss.
- Q.8. Give  $SN^1$  and  $SN^2$  Mechanism of Nucleophilic substitution. Also give their stereochemical aspects.
- Q.9. Why Aryl halides & vinyl halides do not undergo  $Nu-$  substitution easily while allyl and Benzyl halides do so readily?

### AMINES

- Q.1. Give a chemical test to differentiate between
- (a) Methylamine and dimethylamine

(b) Aniline and Benzyl amine

Q.2 Give reasons:-

(1) Why is nitro aniline is formed an nitration of aniline.

(2) Methanamine is aqueous medium gives red ppt with  $\text{FeCl}_3$

Q.3. How will you convert:

(1) Methanol into Ethanoic acid

(2) Ethanoic acid into propanoic acid

(3) Methanamine to Ethanamine

(4) Ethanamine to Methanamine

(5) Propanoic acid to ethanoic amine

(6) Nitro methane into dimethylamine

(7) Benzamide to Toluene

(8) Aniline to Benzyl Alcohol

(9) Chlorobenzene to p-Chloroaniline

(10) Benzoic acid to Aniline

Q.4. Write short notes on :-

(a) Carbylamines  $\text{R}^*$

(b) Coupling  $\text{R}^*$

(c) Hoffmann Bromamide  $\text{R}^*$

(e) Benzoylation

Q.5. Give reasons:-

(a) Why are amines less acidic than alcohols?

(b) Why do  $1^\circ$  Amines have higher BP than  $3^\circ$  amines?

(c) Why are aliphatic amines stronger bases than aromatic amines?

(d) Why aromatic amines cannot be prepared by phthamide method?

(e) Aniline cannot undergo friedal craft's Rx.

