

AFBBS

Kartik 9

FIRST TERM (2015-2016)

BB

CLASS XII

SUBJECT : CHEMISTRY

Time : 3 Hours

M.M. : 70

General Instructions:

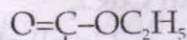
1. Question numbers 1 to 5 carry 1 mark each.
2. Question number 6 to 10 carry 2 marks each.
3. Question numbers 11 to 22 carry 3 marks each.
4. Question number 23 is a value based question and carries 4 marks.
5. Question no. 24 to 26 carry 5 marks each.
6. Use log tables if necessary. Use of calculators is not allowed.

Q. 1. Some of very old glass objects appear slightly milky instead of being transparent. Give reason. (1)

Q. 2. What happens when RBCs are placed in 0.5% NaCl solution? (1)

Q. 3. Allyl chloride is hydrolysed more readily than n-propyl chloride. Why? (1)

Q. 4. Write IUPAC name of: (1)



Q. 5. Carboxylic acids contain carbonyl group but do not show nucleophilic addition reactions like aldehydes & ketones. Why? (1)

XII/Chemistry

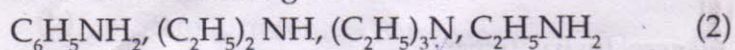
1

P.T.O.

CP

Q. 6. An aqueous solution of sodium chloride freezes below 273K. Explain the lowering in freezing points of water with help of suitable diagram. (2)

Q. 7. Arrange the following substances in an increasing order of basic strength in water:



Q. 8. Name the main disease caused due to lack of the vitamin and its source in each of the following: A, B₆ and E. (2)

Q. 9. Explain the following terms giving a suitable example for each:

- (a) Elastomers
- (b) Condensation polymers (2)

Q. 10. (a) Aspirin is pain relieving antipyretic drug but can be used to prevent heart attack. Explain.

(b) Describe the term antacids giving suitable example. (1×2)

Q. 11. Copper crystallises with face centred cubic unit cell. If the radius of copper atom is 127.8 pm, calculate the density of copper metal. (Atomic mass of Cu = 63.55u and $N_A = 6.02 \times 10^{23} \text{ mol}^{-1}$) (3)

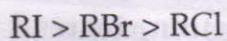
Q. 12. (a) What type of point defects are produced when AgCl is doped with CdCl₂

(b) Frenkel defects are not found in alkali metal halides. Why?

(c) An alloy of gold and cadmium crystallises with a cubic structure in which gold atoms occupy corners and cadmium atoms fit into the face centre. Assign formula for this alloy. (1×3)

Q. 13. Suggest a reason for the following observations:

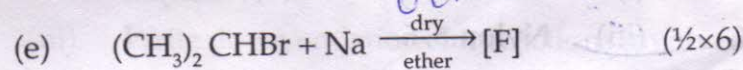
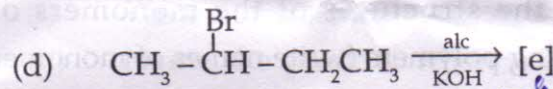
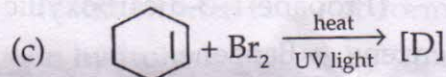
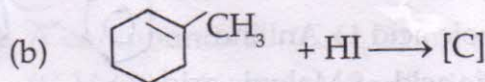
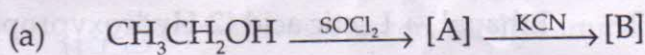
(a) The order of reactivity of haloalkanes is:



(b) Neopentyl chloride $(CH_3)_3CCH_2Cl$ does not follow S_N2 mechanism.

(c) Methyl chloride is hydrolysed more easily than chlorobenzene. (1×3)

Q. 14. Complete the following reactions:

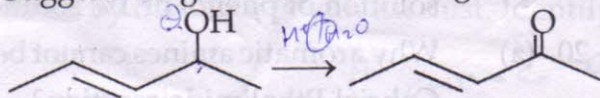


Q. 15. Explain the mechanism of the following reactions:

(a) Acid catalysed dehydration of an alcohol forming an alkene.

(b) Addition of Grignard's reagent to the carbonyl group of a compound forming an adduct followed by hydrolysis. (1/2×2)

Q. 16. (a) Suggest a reagent for the following conversion:



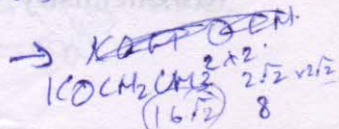
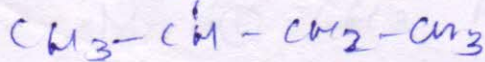
XII/Chemistry

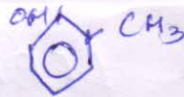
B₂O₃ / CdCl₂

AgCl

C₆H₅NH₂

P.T.O.





~~(b)~~ Out of o-nitrophenol and o-cresol which is more acidic and why?

(c) In Kolbe's reaction, instead of phenol, phenoxide ion is treated with carbon-di-oxide. Why? (1×3)

Q. 17. How will you carry out following conversions (any 3):

1. Formaldehyde → Acetaldehyde

2. Ethanal → Lactic acid (2-Hydroxypropanoic acid)

3. Benzoic acid → Aniline

4. Acetic acid → Malonic acid
(Propane-1, 3-dicarboxylic acid)

5. Ethyl benzene → Benzene.

Q. 18. Draw the structures of the monomers of the following polymers (write names of monomers)

(i) Bakelite (ii) Nylon-6

~~(iii)~~ Nylon-6, 6

Q. 19. (a) Sleeping pills are recommended to patients suffering from sleeplessness but it is not advisable to take them without consulting the doctor.

~~(b)~~ Why do we require artificial sweetening agents.

~~(c)~~ Which of the following is an antiseptic? 0.2% solution of phenol or 1% solution of phenol.

Q. 20. (a) Why aromatic amines cannot be prepared by Gabriel Pthalimide reaction?

(b) Why are primary amines higher boiling than tertiary amines?

(c) Aniline does not undergo Friedel Crafts reaction. Give reason.

Q. 21 (i) Give one chemical test to distinguish between the following pairs of compounds:

(a) Methylamine and dimethylamine

(b) Ethyl amine and aniline

(ii) How will you convert methyl amine to ethyl amine.

Q. 22. A compound 'A' (C_2H_4O) on oxidation gives 'B' ($C_2H_4O_2$). 'A' undergoes iodoform reaction. On treatment with HCN 'A' forms a product 'C' which on hydrolysis gives 2-hydroxy propanoic acid:

(i) Write down structures of A, B and C. $HCN+$

(ii) Name the product when A react with dil. NaOH.

(iii) Write down equations for reactions involved.

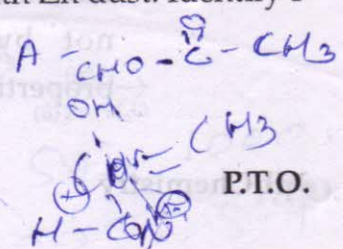
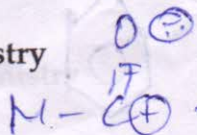
OR

Q. 22. An aromatic compound [P] on treatment with $CHCl_3/KOH$ gives two compounds 'Q' and 'R'. Both Q and R give the same product 'S' when distilled with Zn dust. Oxidation of 'S' gives 'T' having molecular formulae $C_7H_6O_2$. The sodium salt of T on heating with soda lime gives 'U' which may also be obtained by distilling P with Zn dust. Identify P to U.

XII/Chemistry

5

P.T.O.



Q. 23. DDT was first chlorinated organic effective insecticide. The use of DDT increased enormously on a world wide basis after World War II, primarily because of its effectiveness against mosquito that spread malaria and lice which carries typhus. Many species of insects developed resistance towards DDT.

- (a) What is IUPAC name of DDT?
- (b) How will you prepare DDT? Give chemical equation.
- (c) Why is the use of DDT banned in USA in 1973? Give two reasons.
- (d) Do you think we should ban DDT in India? Give reason.

Q. 24. (a) Explain why a solution of chloroform and acetone shows negative deviation from Rault's law.

(b) Phenol associates in benzene to a certain extent to form a dimer. A solution containing 20 g of phenol in 1 kg of benzene has its freezing point lowered by 0.69K. Calculate the fraction of phenol that has dimerised [Given K_f of benzene = 5.1 km^{-1}]

OR

Q. 24. (a) The molecular masses of polymers are determined by osmotic pressure method and not by measuring other colligative properties. Give two reasons.



(b) An aqueous solution containing 12.48 g of BaCl_2 in 1 kg of water boils at 373.0832 K. Calculate the degree of dissociation of barium chloride. [Given K_b for $\text{H}_2\text{O} = 0.52 \text{ K m}^{-1}$]

Q. 25. (a) Illustrate the following name reactions:

(i) Cannizzaro's reaction

(ii) Clemmensen reduction. *MCL.*

(b) How would you expect benzaldehyde to be more reactive or less reactive in nucleophilic addition reactions than propanal? Explain your answer.

(c) Give chemical test to distinguish between propanal and propanone.

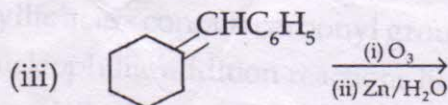
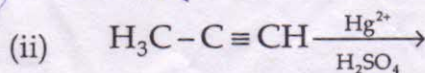
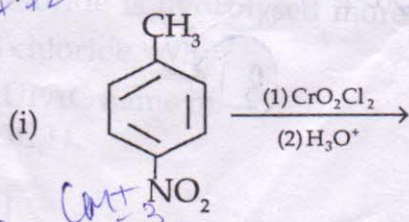
OR

Q. 25. (a) Illustrate the following reactions:

(i) Cross aldol condensation

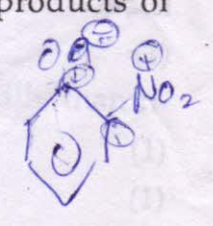
(ii) Rosenmund reduction

(b) Write the structures of main products of following reactions:



*C₆H₅OH.
6*16+22*

*CH₃-C=O
CH₃*



5:1 - 1000 mdy

1000 - 5:1

Q. 26. (a) What happens when D-glucose is treated with following reagents:

- (i) HI
- (ii) Bromine water
- (iii) HNO_3

(b) State differences between:

- (i) globular and fibrous proteins
- (ii) DNA and RNA

OR

Q. 26. (a) What is glycogen? How is it different from starch? How is starch structurally different from cellulose?

- (b) Give pyranose structure of α -D-Glucose
- (c) Which sugar is called invert sugar and why is it called so?

Ques 24 137 g/mol Barium

(31)