

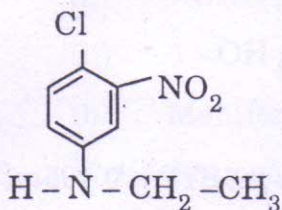
Name JATIN Class & Section _____ Roll No. _____**FIRST TERMINAL EXAMINATION-2015-2016****Class-XII****Subject-Chemistry****Time Allowed : 3 Hrs.****M.M. : 70****Please check the total marks****Do not write any answers on the questions paper.****Instructions :**

- (i) All questions are compulsory
- (ii) Question numbers 1 to 5 are very short answer questions and carry 1 mark each.
- (iii) Question numbers 6 to 10 are very short answer questions and carry 2 marks each.
- (iv) Question numbers 11 to 22 are also short answer questions and carry 3 marks each.
- (v) Question numbers 23 is Value based question and carries 4 marks.
- (vi) Question numbers 24 to 26 are long answer questions and carry 5 marks each.
- (vii) Use log tables if necessary. Use of calculators is not allowed.

1. What change occurs when AgCl is doped with CdCl₂? (1)

2. Which of the following has higher boiling point and Why?
0.1M NaCl or 0.1M Glucose. (1)

3. Give IUPAC name of the following compound :- (1)



4. Draw the Structure of the following (1)

Hex - 2 - en - 4 - ynoic acid

5. What are antiseptics? Give one example (1)

6. Give equation for the preparation of :- (2)

(a) A polyamide fibre

(b) A Polyester

7. Calculate the amount of KCl which must be added to 1 kg of water so that its freezing point is depressed by 2 K. (2)

(K_f for water = $1.86 \text{ K kg mol}^{-1}$, Atomic mass K = 39, Cl = 35.5)

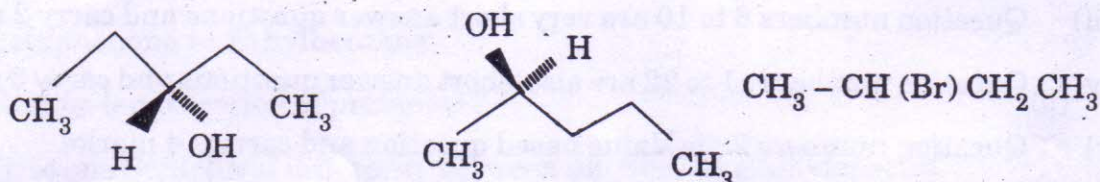
8. Write down the mechanism for the reaction of ethanol with HI (2)

OR

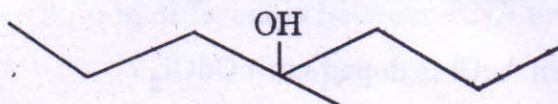
Write down the mechanism of nucleophilic addition reaction in carbonyl compounds.

9. (i) Allyl halides are more prone to S_N^1 mechanism - Why? (2)

(ii) Which of the following would show optical activity - Mark the chiral carbon atom.



10. (i) How would you synthesise the following alcohol from appropriate alkene: (2)



(ii) Write down equation to show reaction between a primary alkoxide and tertiary haloalkane.

11. (a) What type of Semiconductor is obtained when Ge is doped with In. (3)

(b) Why do ionic compounds have high melting point?

(c) What are 13-15 compounds?

12. (a) Define Reverse osmosis

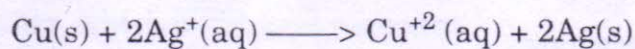
(b) H_2S is a toxic gas. If the solubility of H_2S in water, at STP is 0.195m, calculate the Henry's Law constant. (3)

13. (a) State Kohlrausch Law of independent migration.

(b) The electrical resistance of a column of 0.05 N NaOH solution of diameter 1 cm and length 50 cm is $5.55 \times 10^3 \text{ ohm}$. Calculate its :- (3)

- (a) Conductivity and
(b) molar conductivity

14. (a) Calculate log k_c for the following reaction at 298 K (3)



Given that $E^0(\text{Ag}^+/\text{Ag}) = 0.80\text{V}$

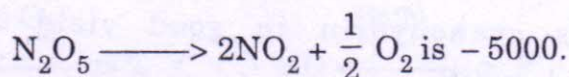
$$E^0(\text{Cu}^{2+}/\text{Cu}) = 0.34\text{V}$$

(b) What happens to a Daniell cell when

$$E_{\text{ext}} > 1.10\text{V}$$

15. (a) Explain the term order of a reaction. (3)

(b) The slope of the line for the graph of $\log k$ Vs $\frac{1}{T}$ for the reaction.



Calculate the energy of activation of the reaction ($R = 8.314 \text{ JK}^{-1} \text{ mol}^{-1}$)

16. (a) Give an example of pseudo first order reaction. (3)

(b) The rate constant for the first order reaction is 60s^{-1} . How much time will it take to reduce the concentration of the reactants to $\frac{1}{16}$ th Value.

17. (a) Give Chemical reactions to show the presence of the following functional groups in glucose.

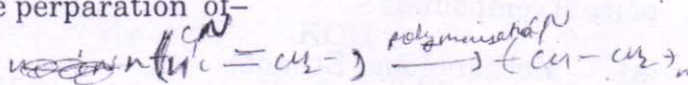
(i) -CHO group

(ii) 5 - OH groups

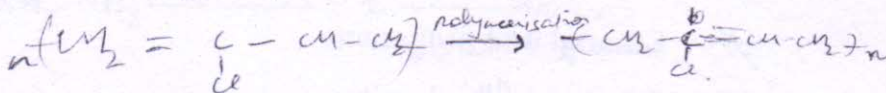
(b) Mention two points to support the cyclic structure of glucose.

18. Write down equations for the preparation of- (3)

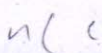
(a) Polyacrylonitrile



(b) Neoprene



(c) Teflon



19. Write down equation for the following name reactions :- (3)

(a) Hell Volhard Zelinsky Reaction.

(b) Rosenmund Reaction

(c) Gabriel phthalimide reaction

20. Arrange the following in decreasing order of the property indicated :- (3)

(a) $C_2H_5NH_2$, $C_6H_5NHCH_3$, $(C_2H_5)_2NH$, $C_6H_5NH_2$ pkb values

(b) Aniline, p-nitroaniline, p-toluidine basic strength

(c) $C_6H_5CH_2Br$, $C_6H_5CH(C_6H_5)Br$, $C_6H_5CH(CH_3)Br$, $C_6H_5C(CH_3)(C_6H_5)Br$,
- SN^2 mechanism

21. Give plausible reasons for the following observations :- (3)

(i) $-NH_2$ group is ortho and para directing, yet on nitration, aniline yields meta derivative as well.

(ii) Cyclohexanone forms cyanohydrin in good yield but 2,2,6-trimethylcyclohexanone does not.

(iii) Phenol has 5 resonating structures as compared to carboxylic acids, which have only two resonating structures, yet carboxylic acids are more acidic than phenols.

OR

(i) Aromatic primary amines can not be prepared by Gabriel phthalimide synthesis.

(ii) Although chlorine is an electron withdrawing group, yet it is ortho - para directing in electrophilic aromatic substitution reactions.

(iii) There are two $-NH_2$ groups in semicarbazide, however, only one is involved in the formation of semicarbazone.

22. Give suitable tests and relevant equations to distinguish between the following pairs of compounds :- (3)

(a) Methanol and Ethanol

(b) ~~Ethanol~~^{Ethanal} and propanone

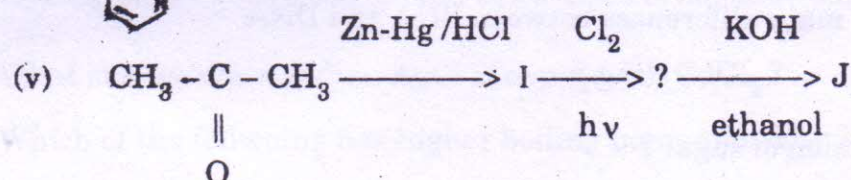
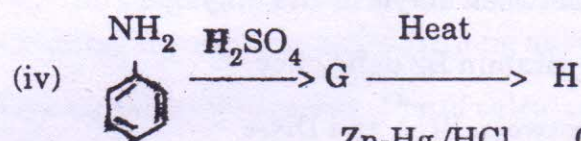
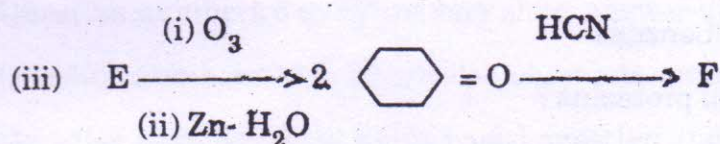
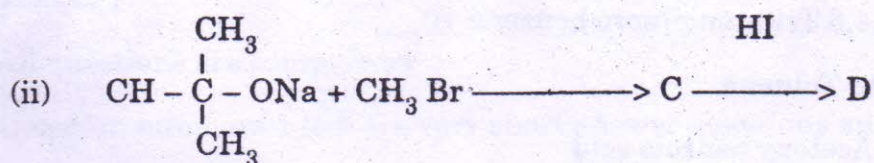
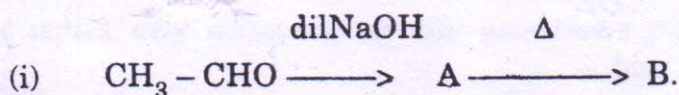
(c) Ethylamine and aniline

23. Anahita wanted to celebrate her grand father's birthday. Since he was a diabetic, she baked a cake with a sugar substitute, which is heat resistant. (4)

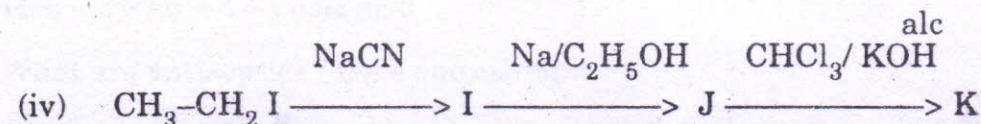
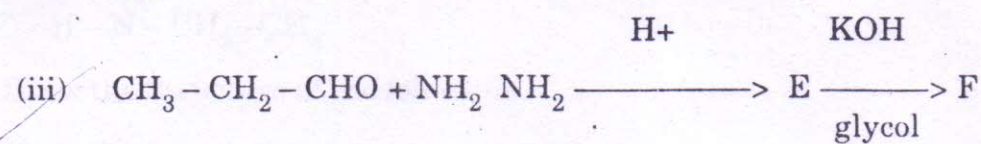
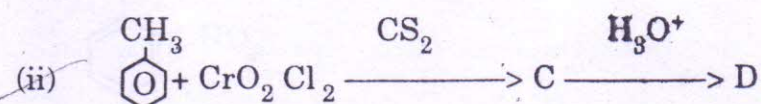
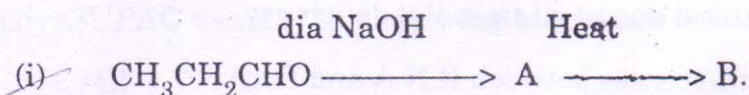
- (a) What are the values associated with Anahita's gesture?
- (b) Name the sugar substitute, which is heat resistant. Name one more artificial sweetener, which is not heat resistant.
- (c) Why should diabetes patients use artificial sweeteners.
- (d) What types of carbohydrate is sucrose ?

24. Complete the following -

(5)



OR



25. How will you carry out the following conversions :-

(5)

- (i) Benzyl alcohol to phenyl ethanoic acid.
- (ii) Aniline to p-Bromoaniline
- (iii) Benzene to benzaldehyde.
- (iv) Propanoic acid to ethanoic acid
- (v) Aniline to benzoic acid

OR

- (i) Bromobenzene to benzoic acid
- (ii) Aniline to 2,4,6 Tribromofluoro benzene
- (iii) Benzamide to Toluene
- (iv) Phenol to 2-Acetoxy benzoic acid
- (v) Acetophenone to Ethylbenzene

26. (i) What is denaturation of proteins ?

(5)

- (ii) Write one Structural difference between amylose and amylopectin.
- (iii) Name one disease caused due to vitamin B₂ deficiency.
- (iv) Write down 2 main differences between RNA and DNA

OR

- (i) What is inversion of sugar ?
- (ii) Write down one structural difference between starch and cellulose.
- (iii) Name one disease caused due to vitamin B₁₂ deficiency.
- (iv) Write down 2 main differences between R.N.A and DNA