

Total No. of Questions :5]

SEAT No. :

[Total No. of Pages : 4

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[5215] - 6

F.Y.B.Sc.

CHEMISTRY - II

Organic and Inorganic Chemistry

(2013 Pattern) (Paper - II) (Theory)

Time : 3 Hours]

[Max. Marks :80

Instructions to the candidates:

- 1) All questions are compulsory.*
- 2) Draw neat diagrams wherever necessary.*
- 3) Figures to the right indicate full marks.*

Q1) Answer the following:

[16]

- a) Explain the following terms:
 - i) Asymmetric carbon atom.
 - ii) Dextrorotatory compound.
- b) Draw zig-zag structure for the following compounds.
 - i) Diethyl ether
 - ii) Butanoic acid
- c) What is bond angle? Explain with suitable example.
- d) What is hydrogen bonding? Explain with suitable example.
- e) Alcohols have higher boiling point than hydrocarbons of comparable molecular weight, Explain.
- f) Alkali metals are good reducing agents. Explain.
- g) What is the general electronic configuration of group IIIA and VII A elements?
- h) Give different allotropes of carbon.

P.T.O.

Q2) Attempt any four of the following:

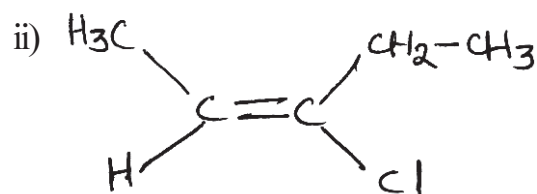
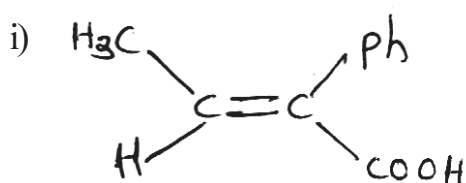
[16]

- a) What is resonance effect? Draw the resonance structures of
- Aniline
 - 2 - butenol
 - Butadiene
- b) Discuss conformational isomerism in n-butane with energy profile diagram.
- c) What are carboxylic acids? What is the action of following on benzoic acid?
- Conc - $\text{HNO}_3/\text{H}_2\text{SO}_4$
 - NaHCO_3
- d) What are alcohols? How will you prepare ethyl alcohol from,
- Acetaldehyde
 - formaldehyde
- e) What are alkynes? How acetylene is obtained from
- Methane
 - Calcium carbide
- f) What is Friedel-Craft alkylation? How is it carried out by using different alkylating agents.

Q3) Attempt any four of the following:

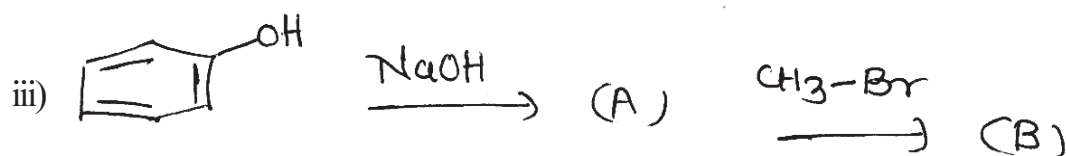
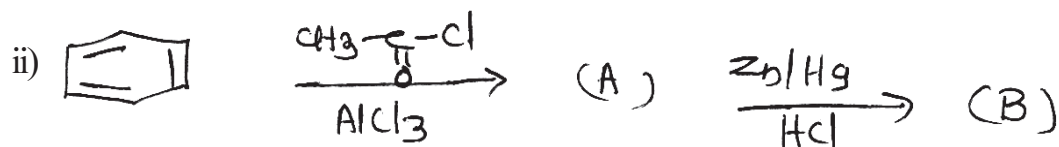
[16]


- a) What are amines? How are they classified? How will you prepare ethylamine from methyl cyanide.
- b) What are alkyl halides? Give its classification. What is the action of following reagents on ethyl bromide?
- alc. KOH
 - Sodium ethoxide
- c) Assign E or Z configuration of the following compounds.




[16]

i) $\text{CH}_3-\underset{\text{Br}}{\text{CH}}-\text{CH}_3 \xrightarrow[\Delta]{\text{alc. KOH}} (\text{A}) \xrightarrow[\text{ii) Zn/H}_2\text{O}]{\text{i) O}_3} (\text{B})$



i) 

ii) 

c) What is hybridisation? Discuss formation of methane molecule using the concept of hybridisation.

- d) Write short notes on:
- i) Williamson's Synthesis
 - ii) Reimer Tiemann reaction.
- e) Explain anomalous behaviour of Nitrogen in group VA elements.
- f) Explain the diagonal relationship between Lithium and Magnesium.

Q5) Attempt any four of the following: **[16]**

- a) Explain periodicity in properties of alkali metals with respect to atomic size and oxidation state.
- b) Give the names and write electronic configuration, of group IIA elements.
- c) Give different applications of alkaline earth metals in Biology, Industry and Agriculture.
- d) Explain bonding and shape of IF_7 molecule.
- e) Draw the structures of IF_5 , H_3PO_4 , SiO_4^{4-} and ICl .
- f) Explain periodicity in properties of group VIA elements with respect to Ionisation energy and electronegativity.

