

Total No. of Questions : 5]

SEAT No. :

[Total No. of Pages : 4

P374

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F.Y.B.Sc.

CHEMISTRY - II

**Organic and Inorganic Chemistry
(2013 Pattern) (Theory) (Paper - II)**

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) Hexane is soluble in benzene while ethyl alcohol is soluble in water; Explain.
- b) Explain following terms
 - i) Bond energy.
 - ii) Bond length.
- c) Draw zig-zag structure for the following compounds:
 - i) 3-buten-1-ol.
 - ii) n-hexane.
- d) Explain intermolecular forces with suitable example.
- e) How will you prepare diazonium salt from aniline?
- f) Alkali metals do not show +2 oxidation state; Explain.
- g) What are metalloids?
- h) Write the electronic configuration of Cr(Z=24) and Cu(Z=29).

Q2) Attempt any Four of the following:

[16]

- a) What is resonance effect? Give necessary conditions for resonance. Draw resonance structures of phenoxide ion.

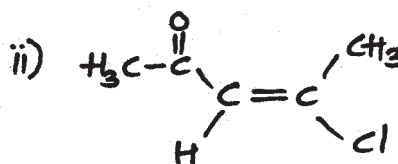
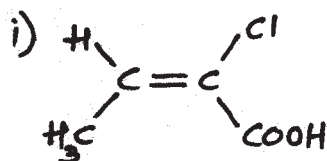
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- b) Discuss conformational isomerism in ethane with energy profile diagram.
- c) What is dehydrohalogenation reaction? How will you prepare propene and 2-butene by this reaction.
- d) What are ethers? How are they classified? How will you prepare diethyl ether by Williamson's Synthesis.
- e) Discuss Hell-Volhard-Zelinsky reaction with suitable example.
- f) What is electrophilic substitution reaction? Explain nitration in benzene.

Q3) Attempt any Four of the following:

[16]

- a) What are amines? How will you prepare ethylamine from,
 - i) Nitroethane.
 - ii) Methyl cyanide
- b) Assign 'E' or 'Z' configuration of the following compounds.



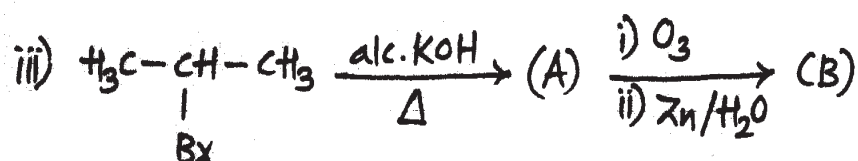
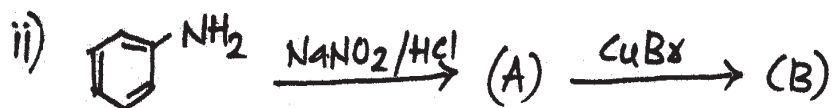
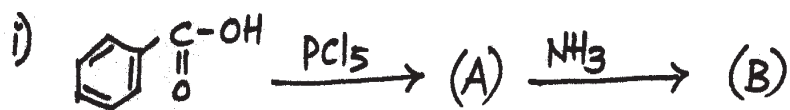
- c) What are alkyl halides? Give its classification. What is the action of sodium methoxide on methyl bromide?
- d) Explain Aldol condensation with suitable example.
- e) What are alkynes? How will you prepare alkynes from,
 - i) Vicinal dihalides.
 - ii) Calcium carbide.
- f) What is steric effect? Explain with suitable example.

Q4) Attempt any Four of the following:

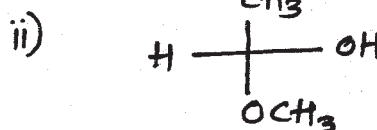
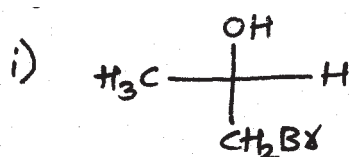
[16]

a) Identify the products A and B and rewrite the reactions

(Any Two)



b) Assign 'R' or 'S' configuration of the following compounds.



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

d) Write short notes on,

i) Kolbe synthesis.

ii) Haloform reaction.

e) What are the similarities of hydrogen with alkali metals?

f) Explain anomalous behaviour of carbon in group IV A elements.

Q5) Attempt any Four of the following:

[16]

- a) Give the names and write electronic configuration of Group I A elements.
- b) Explain the family relationship of alkaline earth metals with reference to
 - i) Size of atoms and ions.
 - ii) Ionization energy.
- c) Define crown ethers. Draw the structures of,
 - i) 12-crown-4.
 - ii) 15-crown-5.
- d) Explain the family relationship of Group V A elements with respect to,
 - i) Ionization energy.
 - ii) Oxidation state.
- e) Explain bonding and structure of Al_2Br_6 .
- f) Write a note on interhalogen compounds.

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