

## II B.Tech. I Semester Supplementary Examinations, May -2005

## ORGANIC CHEMISTRY

(Chemical Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions  
All Questions carry equal marks

\*\*\*\*\*

1. Discuss about polar effects briefly such as inductive, hyperconjugation and resonance effects.
2. Show the reaction mechanism of aldol condensation and describe its uses.
3. (a) What are free-radicals ? How are they formed?  
(b) Describe the free-radical type halogenation of alkanes.
4. Explain the following
  - (a) Chiral center
  - (b) Plane polarised light
  - (c) Meso compound
  - (d) Conformational isomers
5. Write a note on conformational analysis of cyclohexane.
6. (a) Describe the manufacture, properties and uses of Teflon. How is tetrafluoroethylene prepared?  
(b) Discuss the preparation, properties and uses of bakelite.
7. (a) How will you prepare Quinoline? How does it react with the following reagents?
  - i.  $HNO_3 / H_2SO_4$
  - ii.  $H_2SO_4$
  - iii.  $KMnO_4$ .  
(b) Give two methods of synthesis of pyridine.
8. Explain the theory of colour and constitution?

\*\*\*\*\*

**II B.Tech. I Semester Supplementary Examinations, May -2005****ORGANIC CHEMISTRY****(Chemical Engineering)****Time: 3 hours****Max Marks: 80**

**Answer any FIVE Questions**  
**All Questions carry equal marks**

\*\*\*\*\*

1. (a) Define and explain Inductive effect.  
(b) Explain why aniline is less basic in comparison with methyl amine.
2. Write a detailed note on Perkin reaction with mechanism.
3. (a) Discuss the sulphuric acid mediated Markonikoff addition of water to propylene.  
(b) Formulate the reaction and give mechanism for the  $BH_3$  catalyzed addition of water to propylene.
4. Explain the following
  - (a) Chiral center
  - (b) Plane polarised light
  - (c) Meso compound
  - (d) Conformational isomers
5. (a) How maleic acid and fumaric acid react with acetyl chloride? What inference you get from this reaction?  
(b) Write a note on E and Z configurations of geometrical isomers.
6. (a) What is natural wool? How is it obtained?  
(b) Explain the difference between natural and artificial silk. How are they distinguished?
7. (a) What are Heterocyclic compounds? How are they classified?
  - i. Furan is treated with  $SO_3$  in pyridine.
  - ii. Pyridine is treated with sodamide.
  - iii. Quinoline is treated with alkaline  $KMnO_4$ .  
(b) Give the above answers with suitable chemical equations.
8. (a) What are dyes?  
(b) How are they classified?  
(c) Discuss briefly the classification of dye based on their application?

\*\*\*\*\*

**II B.Tech. I Semester Supplementary Examinations, May -2005****ORGANIC CHEMISTRY****(Chemical Engineering)****Time: 3 hours****Max Marks: 80**

**Answer any FIVE Questions**  
**All Questions carry equal marks**

\*\*\*\*\*

1. (a) Explain the difference between resonance and hyperconjugation effects.  
(b) Differentiate the inductive and electromeric effects.
2. Show the reaction mechanism of aldol condensation and describe its uses.
3. (a) What is a free-radical ?  
(b) How do you get bromine free radicals?  
(c) Describe the free-radical mediated addition of HBr to alkenes.
4. (a) Draw the R and S configurations of the following:-
  - i. Bromochloriodomethane
  - ii. sec- Butyl chloride  
(b) Describe a method to determine the optical activity of organic molecules.
5. (a) How maleic acid and fumaric acid react with acetyl chloride? What inference you get from this reaction?  
(b) Write a note on E and Z configurations of geometrical isomers.
6. (a) Describe the manufacture, properties and uses of Teflon. How is tetrafluoroethylene prepared?  
(b) Discuss the preparation, properties and uses of bakelite.
7. (a) Pyrrole is weaker base than pyridine. Explain.  
(b) What is Tetrahydrofuran? How will you prepare it? Mention its important uses.
8. (a) What are “chromophores” and “auxochromes” Give two examples for each type.  
(b) Explain in details how the presence of chromophore give rise to the potentiality to colours.

\*\*\*\*\*

## II B.Tech. I Semester Supplementary Examinations, May -2005

## ORGANIC CHEMISTRY

(Chemical Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions  
All Questions carry equal marks

\*\*\*\*\*

1. Discuss about Electrometric effect.
2. What is alkylation and acylation? Give at least three different examples of each.
3. (a) What is a free-radical ?  
(b) Compare the stabilities of simple carbon free-radicals and explain them.  
(c) Explain the thermal halogenation of methane.
4. Explain the following
  - (a) Chiral center
  - (b) Plane polarised light
  - (c) Meso compound
  - (d) Conformational isomers
5. (a) How maleic acid and fumaric acid react with acetyl chloride? What inference you get from this reaction?  
(b) Write a note on E and Z configurations of geometrical isomers.
6. (a) Write the structures of condensation polymers obtained from the following:-
  - i. Oxalic acid and ethylene glycol.
  - ii. Terephthalic acid and ethylene diamine.
  - iii. Adipic acid and ethylene glycol.  
(b) Discuss the preparation, properties and uses of
  - i. Natural rubber
  - ii. Teflon.
7. (a) How will you prepare pyridine? Indicate how does it react with electrophilic reagents.  
(b) With suitable chemical equations, indicate the products for the following reactions.
  - i. Quinoline with  $\text{LiAlH}_4$
  - ii. Quinoline with alkaline  $\text{KMnO}_4$
  - iii. Isoquinoline with fuming  $\text{H}_2\text{SO}_4$
  - iv. Isoquinoline with sodamide.

8. (a) What are dyes?  
(b) How they are classified?  
(c) Explain the classification of dye based on their chemical structure.

★ ★ ★ ★ ★