Code No: RR210802 **Set No. 1**

II B.Tech I Semester Supplementary Examinations, November 2006
ORGANIC CHEMISTRY
(Chemical Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Explain the following applications of Inductive effect
   i. Effect of bond lengths
   ii. Dipole moment
   iii. reactivity of alkyl halide
   (b) Discuss the strength of carboxylic acid based upon Inductive effect. [9+7]

2. Give reaction mechanism of the following figure 2a
   (a)

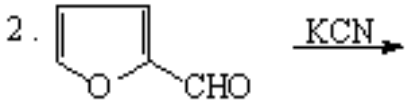

Figure 2a

   (b) $2CH_3CHO \xrightarrow{OH^-}$

[8+8]

3. (a) How do you detect whether an organic reaction is going by free-radical mechanism or not ?
   (b) Describe the chlorination of ethane in the presence of peroxide or UV light.

[8+8]

4. Explain the following
   (a) Chiral center
   (b) Plane polarised light
   (c) Meso compound
   (d) Conformational isomers [4×4]

5. (a) Which types of compounds exhibit geometrical isomerism? Give examples.
   (b) Draw the structures of maleic acid and fumaric acid and assign configuration on the basis of E-Z rotation. [8+8]

6. (a) What is Cellulose? How is it obtained?

(b) Write a note on the advantages and disadvantages of fibres based on cotton and polyester. [6+10]

7. (a) How pyridine can act as a stronger base than pyrrole?
   (b) How will you get isoquinoline? [8+8]

8. What makes an organic compound coloured? Give the method of preparation and uses of Malachite Green and Congo Red. [16]

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Code No: RR210802 **Set No. 2**

II B.Tech I Semester Supplementary Examinations, November 2006
ORGANIC CHEMISTRY
(Chemical Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Explain hyperconjugation.
   (b) Explain why chloroacetic acid is stronger than acetic acid? [8+8]

2. Show the following reaction mechanism

   (a)
   $$CH_3.CH_3\text{-}\underset{\displaystyle H}{\underset{|}{C}}{=}O + CH_3 - CH - CHO \xrightarrow{OH^-/H^+}$$

   (b)
   $$CH_3 - \underset{\displaystyle CH_3}{\underset{|}{C}}{=}O + CH_3 - \underset{\displaystyle O}{\underset{\|}{C}} - CH_3 \xrightarrow{OH^-/H^+}$$

   [8+8]

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. [8+8]

4. Explain the following
   (a) Chiral center
   (b) Plane polarised light
   (c) Meso compound
   (d) Conformational isomers [4×4]

5. Write a note on conformational analysis of cyclothexane. [16]

6. (a) What is Vulcanisation? Why is this done?
   (b) Describe properties and uses of cellulose. [8+8]

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. [4+12]

8. Explain the following terms :

(a) Chromophore

(b) Auxochrome

(c) Chromogen

(d) Batho chromic shift

(e) Hypo chromic shift [4+3+3+3+3]

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Code No: RR210802 **Set No. 3**

II B.Tech I Semester Supplementary Examinations, November 2006
ORGANIC CHEMISTRY
(Chemical Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Define and explain Inductive effect.
   (b) Explain why aniline is less basic in comparison with methyl amine. [10+6]
2. Show the reaction mechanism of aldol condensation and describe its uses. [16]
3. (a) What happens when a mixture of butane and chlorine gases is heated in a sealed tube?
   (b) Formulate and give mechanism for the reaction between 1-butene and NBS. [8+8]
4. Explain the following
   (a) Chiral center
   (b) Plane polarised light
   (c) Meso compound
   (d) Conformational isomers [4×4]
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 isomens. [8+8]
6. (a) What is Vulcanisation? Why is this done?
   (b) Describe properties and uses of cellulose. [8+8]
7. (a) Pyrrole is weaker base than pyridine. Explain.
   (b) What is Tetrahydnofman? How will you prepare it? Mention its important uses. [7+9]
8. Write down the synthesis of the following
   (a) Malachite Green
   (b) para - rosaniline
   (c) Magenta [6+5+5]

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Code No: RR210802 **Set No. 4**

II B.Tech I Semester Supplementary Examinations, November 2006
ORGANIC CHEMISTRY
(Chemical Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Explain the following applications of Inductive effect
   i. Effect of bond lengths
   ii. Dipole moment
   iii. reactivity of alkyl halide
   (b) Discuss the strength of carboxylic acid based upon Inductive effect. [9+7]
2. What is alkylation and acylation? Give at least three different examples of each. [16]
3. (a) Formulate and give mechanism for the addition reaction of water to isobutylene in the presence of H_2SO_4.
   (b) How do you carry out anti-Markonikoff addition of water to isobutylene? Give mechanism for this reaction. [8+8]
4. Explain the following
   (a) Chiral center
   (b) Plane polarised light
   (c) Meso compound
   (d) Conformational isomers [4×4]
5. How will you assign E-Z notations to geometrical isomers? Explain with suitable examples. [16]
6. (a) Explain the difference between natural rubber and gutta percha.
   (b) Write briefly on
   i. Wool and
   ii. Silk. [8+8]
7. (a) Explain the aromaticity of pyrrole, furan and thiophene.
   (b) How does pyridine react with the following?
   i. HI at 300^oC.
   ii. Sodium in C_2H_5OH
   iii. Sodamide in liquid ammonia. [10+6]

8. Explain what are
   (a) Direct dyes
   (b) Mordant dyes
   (c) Vat dyes.
   (d) Ingrain dyes with examples. [16]

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