

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**BE - SEMESTER-III (New) EXAMINATION – WINTER 2015**

**Subject Code:2133605****Date:21/12/2015****Subject Name: Organic Chemistry for Technologists****Time: 2:30pm to 5:00pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

**MARKS**

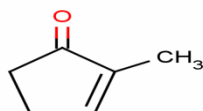
**Q.1 Short Questions 14**

- 1 Give the IUPAC name of  $\text{CH}_3\text{CH}(\text{CN})\text{CH} = \text{CHCOCH}_2\text{CHO}$ .
- 2  $\text{NH}_3$ ,  $\text{HSO}_3^-$ ,  $\text{AlCl}_3$  and  $\text{OH}^-$ , which is not an electrophile?.
- 3 How many isomeric dichlorobenzene ?
- 4  $\text{C}_6\text{H}_5\text{NO}_2 + \text{Br}_2/\text{FeCl}_3 \rightarrow \text{A}$ . Give the name and structural formula of A.
- 5 Write down the structural formula of DDT.
- 6 Why p-Nitrophenol is a stronger acid than Phenol?
- 7 Which basic compound is present in all sulfa drugs?
- 8 Give the structural formula of Aspirine.
- 9 Give name of test which is used to distinguish Aniline and N-methyl aniline?
- 10 Which compound is most acidic from  $\text{HCOOH}$  and  $\text{CH}_3\text{COOH}$ ?
- 11 What happens when Phenol is treated with neutral  $\text{FeCl}_3$ ?
- 12 Define Free radical.
- 13 What is Inductive effect?
- 14 Why benzyl carbanion is more stable than ethyl carbanion?

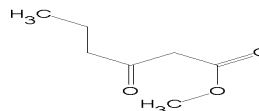
**Q.2 (a) Write a note on: Cannizzaro reaction. 03**

**(b) Write IUPAC name of following; 04**

a.



b.

c.  $\text{CH}_3\text{CH}_2\text{COCH}_2\text{CH}_2\text{COOCH}_3$ d.  $(\text{CH}_3\text{CH}_2)_2\text{CHCN}$ 

**(c) Explain why; 07**

- a. Aromatic amino compound is less basic than aliphatic amino compound.
- b. o-Nitroaniline is weaker base than aniline.
- c. p-Toludine is more basic than aniline.

**OR**

**(c) Explain Hoffman reaction with mechanism. 07**

- Q.3 (a)** What are Carbonium ions? Arrange the following according to their increasing stability. Explain your answer. **03**
- $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2^+$
  - $(\text{CH}_3)_3\text{C}^+$
  - $\text{CH}_3\text{CH}_2(\text{CH}_3)\text{CH}^+$ .
- (b)** How will you convert; **04**
- Nitrobenzene  $\rightarrow$  Benzidine
  - Bromobenzene  $\rightarrow$  Benzoic acid
- (c)** Who were the pioneers of Alkylation & Acylation reaction? Explain its mechanism. **07**

**OR**

- Q.3 (a)** Write a note on: **03**
- Saccharin
  - Chloramine - T.
- (b)** Compound (A)  $\text{C}_6\text{H}_6\text{O}$  is soluble in NaOH when treated with  $\text{CHCl}_3$  & NaOH; it forms (B) (Reimer-Tiemann reaction). Compound (B), an oxidation gives (C) which reacts with acetic anhydride in the presence of a small amount of  $\text{H}_2\text{SO}_4$  to form (D),  $\text{C}_9\text{H}_8\text{O}_4$ . Deduce the structural formulas of (A), (B), (C) & (D). Write equation for the reaction involved. **04**
- (c)** Define Nucleophilic substitution reaction. Explain  $\text{S}_\text{N}^2$  and  $\text{S}_\text{N}^1$  reaction with mechanism. **07**
- Q.4 (a)** How will you synthesize m-Nitroaniline and p-Nitroaniline from aniline? **03**
- (b)** Give the general mechanism of electrophilic addition reaction. **04**
- (c)** How does aniline react with; **07**
- Acetic anhydride
  - Bromine water
  - Benzaldehyde
  - Conc.  $\text{H}_2\text{SO}_4$  at  $180^\circ\text{C}$
  - Acetyl chloride
  - Nitrous acid at  $0$  to  $5^\circ\text{C}$ .
  - Chloroform and alc. KOH

**OR**

- Q.4 (a)** Draw structure corresponding to the following IUPAC names; **03**
- 3-Cyclopentylbuta-1,3-diene
  - 6-Cyano-3-oxo-4-heptenal
  - 1-Ethoxy-1-propanol
- (b)** How will you convert; **04**
- Aniline  $\rightarrow$  p-Bromoaniline

b. Phenol → Salicylaldehyde

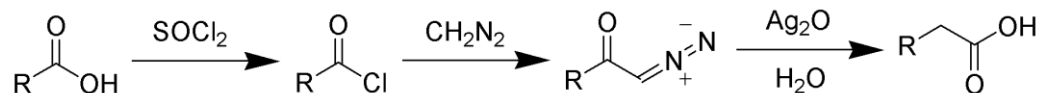
- (c) How will you convert primary amide to primary amine? Give name of the reaction and explain its mechanism also. **07**

**Q.5 (a)** Write a note on: **03**

a. Kolbe reaction

b. Fries rearrangement

- (b) Name the following reaction and Explain its mechanism. **04**



- (c) Explain Baeyer Villiger oxidation reaction with mechanism and application. **07**

**OR**

- Q.5 (a)** A compound  $\text{C}_7\text{H}_5\text{O}_6\text{N}_3$  (A) undergoes oxidation with acidified potassium dichromate to give a mono carboxylic acid (B)  $\text{C}_7\text{H}_3\text{O}_8\text{N}_3$ . When (B) is heated in acetic acid solution, (C)  $\text{C}_6\text{H}_3\text{O}_6\text{N}_3$  is formed. What are (A), (B) and (C)? Give equation for the reaction involved. **03**

- (b) Name the following reaction and Explain its mechanism. **04**



- (c) Write a note on: Baker-Venkatraman reaction with mechanism. **07**

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