

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-III • EXAMINATION – WINTER • 2014****Subject Code: 130501****Date: 23-12-2014****Subject Name: Organic Chemistry and Unit Processes****Time: 02.30 pm - 05.00 pm****Total Marks: 70****Instructions:**

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

- Q.1 (a)** Answer the following questions: **07**
- (i) Which of the following is an electrophile?
 NH_3 , CH_3^+ , CN^- , H_2O
 - (ii) Define Carbocation.
 - (iii) Give example of polynuclear hydrocarbon which sublimes on heating.
 - (iv) Differentiate between homolysis and heterolysis.
 - (v) Write chemical reaction for inversion of cane sugar.
 - (vi) Write chemical reaction of conversion of salicylic acid into aspirin.
 - (vii) Which among phenol and picric acid is more acidic and why?
- (b)** Give a comparative account of $\text{S}_{\text{N}}1$ and $\text{S}_{\text{N}}2$ reaction. **04**
- (c)** Write a note on Walden inversion. **03**
- Q.2 (a)** What do you understand by unit processes? Explain sulphonation unit process stating its significance. **07**
- (b)** Answer the following: **4+3**
- (i) Give classification of carbohydrates.
 - (ii) Define cetane number and octane number.
- OR**
- (b)** Answer the following: **4+3**
- (i) Carry out conversion of aldohexose to ketohexose and vice-versa.
 - (ii) Write in brief about fractional distillation of petroleum.
- Q.3 (a)** Explain quick vinegar process of manufacturing acetic acid. How will you carry out following conversions? **07**
- (i) Acetic acid to acetic anhydride
 - (ii) Acetic acid to acetamide
- (b)** Write mechanism and applications of following reactions: **07**
- (i) reformatsky (ii) Perkin reaction
- OR**
- Q.3 (a)** Answer the following: **07**
- (i) Explain esterification reaction, giving its mechanism.
 - (ii) Differentiate between soap and detergent
- (b)** Write mechanism and applications of following reactions: **07**
- (i) Cannizzaro reaction (ii) Wolf Kischner reaction
- Q.4 (a)** Write about manufacturing of naphthalene from coal tar? **03**
- (b)** Discuss structure of benzene. **04**
- (c)** With suitable examples explain classification of dyes on the basis of structure. **07**

OR

- Q.4** (a) What is the basis of classification of amino acids? Give example from each class. **03**
- (b) What do you understand by heterocyclic compound? Give example of any 5-membered heterocyclic compound and state its properties and uses. **04**
- (c) Explain colour and constitution theory of dyes. **07**

- Q.5** (a) Differentiate between: **04**
- (i) Enantiomers and Diastereomers
- (ii) Meso and racemic mixture
- (b) Write in brief about synthetic uses of Grignard agent. **05**
- (c) Write in brief about any process of manufacturing synthetic petrol. **05**

OR

- Q.5** (a) Explain optical isomerism of tartaric acid. **05**
- (b) Explain electrophilic substitution reaction taking suitable example. **05**
- (c) Write about properties and uses of polythene and ethanol **04**
