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GUJARAT TECHNOLOGICAL UNIVERSITY

B.PHARM. - SEMESTER-VII • EXAMINATION - SUMMER-2016 Date: 13/05/2016 Subject Code: 2270012 **Subject Name: Green Chemistry** Time: 2:30 PM to 5:30 PM **Total Marks: 80 Instructions:** 1. Attempt any five questions. 2. Make suitable assumptions wherever necessary. 3. Figures to the right indicate full marks. **Q.1** (a) Give introduction to Green chemistry. **(6)** Write synthesis of the following compounds **(b) (5)** Adipic acid II. Ibuprofen Enumerate microwave assisted reaction in water. Explain reductions (c) **(5)** reaction in details. **Q.2** Describe twelve principles of green chemistry with their examples. (a) **(6)** Give the reaction of. **(b) (5)** I. Cannizaro reaction II. Reformatsky reaction Discuss in brief designing of green synthesis. **(5)** (c) **Q.3** Explain uses of microwaves and ultrasonic energy. (a) **(6)** Add note on: Combinatorial green chemistry. **(b) (5)** (c) Explain the limitations of green chemistry. **(5)** Give polymeric sulfonic acids reaction with examples. **Q.4** (a) **(6)** Explain oxidation and alkylation reactions of ultrasound assisted reactions. **(b) (5)** Give the synthesis route on, (c) **(5)** 4- aminodiphenylamine I. II. Acetaldehyde Write a reaction of microwave assisted organic solvents, **Q.5** (a) **(6)** Claisen rearrangement I. Decarboxylation II. Diels alder reaction III. Explain techniques of biocatalysts. **(b) (5)** Give the application of green chemistry in industrial synthesis. (c) **(5)** Short note on proliferation solvent less reactions. **Q.6** (a) **(6)** Discuss oxidation reaction of toluene and alcohols reaction of microwave **(b) (5)** assisted in water. Give advantages and limitations of biocatalysts. **(5)** (c) **Q.7** Enumerate and explain microwave solvent free reactions (a) **(6)** Write a note on polymer supported catalysts. **(b) (5)**

(5)

Write a note on green solvents.

(c)