

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

# GUJARAT TECHNOLOGICAL UNIVERSITY

BE SEM-III Examination May 2012

Subject code: 132804

Subject Name: Polymer Chemistry

Date: 08/05/2012

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) | Explain Bulk and Emulsion polymerization with figure.                                                                          | 07 |
|           | (b) | What is polymerization? Give note on addition polymerization mechanism in detail.                                              | 07 |
| Q.2       | (a) | Explain geometry of polymers in detail. What is tacticity of polymers?                                                         | 07 |
|           | (b) | Explain number average and weight average molecular weight in detail and derive related equations.                             | 07 |
| <b>OR</b> |     |                                                                                                                                |    |
| Q.2       | (b) | Discuss step polymerization with minimum three no. of examples.                                                                | 07 |
| Q.3       | (a) | What is acrylic polymer? Give structure, preparation, properties, important copolymers and uses of it.                         | 07 |
|           | (b) | What is viscosity? Explain viscometry technique to determine the polymer molecular weight.                                     | 07 |
| <b>OR</b> |     |                                                                                                                                |    |
| Q.3       | (a) | What is End Group Analysis? Discuss this technique with equation.                                                              | 07 |
|           | (b) | Discuss Tg. Explain DSC and DTA technique in detail.                                                                           | 07 |
| Q.4       | (a) | Describe addition and substitution reaction with examples.                                                                     | 07 |
|           | (b) | Explain blow and injection molding to prepare types of articles.                                                               | 07 |
| <b>OR</b> |     |                                                                                                                                |    |
| Q. 4      | (a) | What distinguish between polyamides and polyamines? Explain polyamides and related polymers.                                   | 07 |
|           | (b) | Discuss hydrolysis and hydrogenation reaction.                                                                                 | 07 |
| Q.5       | (a) | Explain critical problems regarding uses of polymers. What type of awareness for future all over the world we should maintain. | 07 |
|           | (b) | Who invented vulcanization process? Explain vulcanization process in detail.                                                   | 07 |
| <b>OR</b> |     |                                                                                                                                |    |
| Q.5       | (a) | Describe thermosetting polymers. Write preparation, properties and uses of phenol formaldehyde crosslink polymer in detail.    | 07 |
|           | (b) | Explain any one spectroscopic technique for testing of polymers.                                                               | 07 |

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