

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

B.E. Sem-III Regular / Remedial Examination December 2010

Subject code: 132804

Subject Name: POLYMER CHEMISTRY

Date: 18 /12 /2010

Time: 10.30 am – 01.00 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) Describe the manufacturing, properties and applications of polyacrylamide. 07
(b) Explain DTA and TGA. 07

- Q.2** (a) Discuss of Vulcanisation of rubber. 07
(b) Describe the manufacturing, properties of polystyrene and applications of polystyrene and its different co-polymers. 07

OR

- (b) Give a brief account on the environmental issues of polymers and various methods to reduce the pollution load due to polymers. 07

OR

- Q.3** Enlist different types of polyolefins. Describe elaborately various technochemical aspects of polypropylene. 14

- Q.3** (a) Write a short note on amino resins. 07
(b) Explain X-ray diffraction and give a brief note on electron microscopy. 07

- Q.4** (a) Give synthesis, properties and applications of bakelite. 07
(b) What is polymerization? Explain emulsion polymerization in detail. 07

OR

- Q.4** (a) What is weight average molecular weight and number average molecular weight? Determine $M_n = \frac{\sum niMi}{\sum ni}$, $M_w = \frac{\sum niMi^2}{\sum niMi}$ 07

- (b) Explain end group analysis in detail. 07

- Q.5** (a) Discuss extrusion and blow moulding in detail. 07
(b) What is addition and substitution reaction? Explain with suitable examples. 07

OR

- Q.5** (a) Determine the equation $\frac{1}{M_w} = \left(\frac{KC}{R_\theta} \right)_{c, \theta \rightarrow 0}$ 07

Where C = concentration of solution

R_θ = Rayleigh ratio at any angle

K = light scattering calibration constant

- (b) Explain geometry of polymers in detail. 07
