Seat No.:	Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-V (NEW) - EXAMINATION - SUMMER 2016

Subject Code:2152307 Date: 13/05/2016 **Subject Name: Plastic Extrusion Technology** Time:02:30 PM to 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) Describe the manufacturing of PVC pipe with line diagram. Give its various 07 applications. **(b)** With neat diagram discuss various types of screw for different applications. 07 **Q.2** Discuss manufacture of 3 layer plastic film by blown film extrusion with neat 07 diagram. 07 **(b)** Write the difference between Single and Twin screw extruders. (b) Explain manufacturing process for raffia with nest diagram along with its **07** applications. What is difference between film and sheet? What are the difference between 0.3 07 blown films and cast films? Discuss. **(b)** Write about: (a) Melt fracture. **07** (b) A plastic shrink wrapping with a thickness of 0.06 mm is to be produced using an annular die with a die gap of 0.9 mm. Assuming that the inflation of the bubble dominates the orientation in the film, determine the blow-up ratio required to give uniform biaxial orientation. Explain manufacturing of biaxially oriented polypropylene (BOPP) film with 0.3 07 (a) net diagram. (b) List various types of dies used in extrusion explain any two with neat diagram. 07 **Q.4** Discuss in detail, devolatilization in screw extruders. 07 (a) In a particular extruder screw the channel width is 45 mm, the channel depth is 2.6 07 mm, the screw diameter is 45mm, the screw speed is 150 rev/min, the flight angle is 17 ° 42 ' and the pressure varies linearly over the screw length of 1000 mm from zero to 25 MN/m2 at the die entry. Estimate (a) the drag flow (b) the pressure flow (c) the total flow. Note: The plastic has a viscosity of 210 Ns/m². OR 0.4 Give detail classification of twin screw extruder. Differentiate between co-07 rotating and counter rotating twin screw extruder. (b) Which are the types of heating systems used on Extrusion machines? Discuss 07 electrical heating in detail. **Q.5** What is the importance of Grooved barrel technology? Discuss in detail. **07** (a) (b) Give any five troubleshooting for manufacturing of pipes. 07 OR (a) What is the purpose of development of reactive extrusion? Explain reactive **Q.5** 07 extrusion process in detail along with its applications. **(b)** Give startup and shut down procedure of extruder. 07 ***********