

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI • EXAMINATION – WINTER 2013****Subject Code: 162301****Date: 27-11-2013****Subject Name: Plastic Extrusion Technologies****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) With a neat line diagram, explain the working of a Single Screw Extruder along with various parts. **07**
- (b) Write the difference between Single and Twin screw extruders. Give suitable examples. **07**
- Q.2** (a) Define : Extrudate; Sagging, breaker plate, Die, Thrust bearing, Reduction gear box, Thermocouple **07**
- (b) Fill in the blanks: **07**
1. _____ bearings are used in the thrust bearing block of a twin screw extruder.
 2. Function of screen pack is _____
 3. Corotating twin screw extruders are used for _____ materials.
 4. IBM offers _____ advantages.
 5. Nylon screw has configuration of _____
 6. Hopper cooling is must due to _____
 7. Die face cutter is used for _____
- OR**
- (b) With a neat line diagram, explain manufacture of monofilaments from Nylon. **07**
- Q.3** (a) Discuss in detail, the thrust bearing block of single screw extruder **07**
- (b) What are the heating systems used on screw extruders? Explain electrical systems. **07**
- OR**
- Q.3** (a) What is a film? Explain manufacture of HMHDPE films with a neat line diagram. **07**
- (b) Discuss the difference between corotating and counter rotating twin screw extruders. **07**
- Q.4** (a) Discuss about the grooved barrel technology. **07**
- (b) Discuss manufacture of HDPE Pipes with a neat line diagram. **07**
- OR**
- Q.4** (a) What is Devolatilization? Explain various designs for screw extruders **07**
- (b) Discuss importance of RAM extruders. **07**
- Q.5** (a) What is the selection criteria of material for wire and cable covering? Discuss manufacture of wires and cables with a line diagram. **07**
- (b) Discuss the various types of drives used on screw extruders. Highlight AC v/s. DC drives. **07**
- OR**
- Q.5** (a) In a particular extruder screw, the channel width is 55mm, the channel depth is 2.6mm, the screw diameter is 55mm, the screw speed is 100 rev/min, the flight angle is 17.66 deg and the pressure varies linearly over the screw length of 1000 mm from zero at entry to 20 MN/m² at the die entry. Estimate: **07**
1. The Drag Flow.

2. The pressure flow.

3. The total flow.

Assume plastic material has a viscosity of 230 Ns/m².

(b) Design of Cutter units in Pipe Extrusion: Discuss

07
