Seat No.: _____ Enrolment No._____

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**

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