

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

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

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**BE SEM-VI Regular Examination May 2011**

**Subject code: 162301**

**Subject Name: Plastic Extrusion Technologies**

**Date: 16-05-2011**

**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) Discuss the working principle of a single screw extruder. Also compare single screw v/s. twin screw extruder. **07**  
(b) With a neat line diagram, discuss the manufacture of LDPE films. **07**

- Q.2** (a) Discuss devolatilization in screw extruders in detail. **07**  
(b) With a neat line diagram, discuss the manufacture of Nylon monofilaments. **07**

**OR**

- (b) Discuss raw material selection criteria for extrusion process in detail. **07**

- Q.3** (a) 1. A plastic film, 0.20 mm thick, is required to have its orientation in the transverse direction twice that in the machine direction. If the film blowing die has an outer diameter of 150mm and an inner diameter of 146mm, estimate the blow up ratio required and the lay flat film width. Neglect extrusion effects and assume there is no drawdown. **07**

2. Estimate the B-10 life of a thrust bearing given that:

$$P = 45 \text{ MPa} \quad N = 150 \text{ rpm} \quad K = 10/3$$

$$B-10 \text{ std} = 1,00,000 \text{ hrs}$$

- (b) Discuss in detail, the manufacture of Wires and cables. Give a neat line diagram. **07**

**OR**

- Q.3** (a) Define and discuss significance of : L/D ratio ; compression ratio ; helix angle ; root diameter ; flight depth ; breaker plate ; screen pack **07**

- (b) Discuss various types of heating systems used on screw extruders. **07**

- Q.4** (a) Discuss the various types of drives used on screw extruders. **07**  
(b) With a neat line diagram, discuss the manufacture of HDPE Pipes. **07**

**OR**

- Q.4** (a) Discuss grooved barrel technology in detail. **07**

- (b) What is IBC ? Discuss its importance. **07**

- Q.5** (a) Discuss the manufacture of braided hoses. **07**

- (b) Discuss thrust bearing blocks of a single and twin screw extruders with diagrams. **07**

**OR**

**Q.5 (a)** Fill in the blanks:

**07**

1. Surging is due to \_\_\_\_\_
2. Output of single screw extruder depends on \_\_\_\_\_
3. Leakage flows seen in twin screw extruders are \_\_\_\_\_
4. Advantage of conical twin screw extruder is \_\_\_\_\_
5. Masterbatches are made by \_\_\_\_\_ extruder.
6. Ram extruder is used for \_\_\_\_\_ plastic materials.
7. Material of screw in extruders is \_\_\_\_\_

**(b)** Discuss in detail, Wet extrusion process.

**07**

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