

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 MPa N = 150 rpm K = 10/3
B-10 std = 1,00,000 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
