

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE – SEMESTER – V (NEW) EXAMINATION – WINTER 2015

Subject Code: 2152307

Date: 10/12/2015

Subject Name: Plastic Extrusion Technologies

Time: 10:30am to 1:00pm

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) What is the Principle of a Single Screw Extruder ? Classify Extruders and discuss parts of Single Screw Extruder in detail. **07**

(b) Discuss about Thrust bearing blocks of Single and Twin Screw Extruders. **07**

Q.2 (a) Discuss importance of Devalatilization ? Also discuss various ways in which devalatilization is done on extruders. **07**

(b) Compare Single Screw v/s. Twin Screw Extruders **07**

OR

(b) Discuss in detail heating systems used on Extruder machines **07**

Q.3 (a) What is Grooved barrel technology? Discuss in detail. **07**

(b) Discuss about twin screw extruders in detail. **07**

OR

Q.3 (a) Define : Extruder ; L/D RATIO; Helix angle; drag flow; back pressure; compression ratio; blow up ratio **07**

(b) Fill in the blanks: **07**

1. Twin Screw Extruder works on _____ principle.
2. Function of Screen pack is _____
3. _____ is required for screw and barrel when we process PVC material.
4. Function of GODET is _____
5. IBC offers advantage of _____
6. _____ extruder is used for processing of UHMWPE material.
7. _____ reduction gear box gives maximum efficiency.

Q.4 (a) Discuss in detail, the process of nitriding **07**

(b) With a neat line diagram, discuss the manufacture of PP Films. **07**

OR

Q.4 (a) With a neat line diagram, discuss manufacture of PVC Pipes. **07**

Q.4 (b) Discuss various Screw Designs along with application of each. **07**

Q.5 **(a)** 1. A plastic film, 0.25 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 145mm and an inner diameter of 130 mm, 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:
 $P = 45 \text{ MPa}$ $N = 135 \text{ rpm}$ $K = 10/3$
B-10 std = 1,00,000 hrs

(b) With a neat line diagram, discuss manufacture of Nylon Monofilaments. **07**

OR

Q.5 **(a)** Discuss Wire and Cable Covering with a line diagram. **07**
(b) Discuss raw material selection criteria for extrusion process in detail. **07**
