

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-V (NEW) - EXAMINATION – SUMMER 2017

Subject Code:2152307**Date: 10/05/2017****Subject Name: Plastic Extrusion Technology****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.

		MARKS
Q.1	Short Questions	14
	1 Explain the working principle of a single screw extruder	
	2 What is the function of thrust bearing block?	
	3 What is RGB?	
	4 What is the need for hopper cooling in extruder machines?	
	5 What is breaker plate? Explain its function	
	6 Why do we need screen pack in Extruders?	
	7 Draw a screw used for Devolatilization	
	8 What is L/D ratio? Explain its significance.	
	9 What is Compression ratio? Explain its Significance.	
	10 What is IBC?	
	11 Draw a line diagram for manufacture of PP films	
	12 Why do we need sizing in a pipe plant?	
	13 Suggest suitable die used for HMHDPE film plant.	
	14 Define : Drag flow , pressure flow	
Q.2	(a) What is a RAM Extruder? Where is it used?	03
	(b) Differentiate between AC and DC drives	04
	(c) With a neat line diagram, discuss the manufacture of HDPE monofilaments.	07
	OR	
	(c) With diagrams, explain the various types of screws used in Extrusion Industry.	07
Q.3	(a) Estimate the B-10 life of a thrust bearing given that: $P = 50 \text{ MPa}$ $N = 135 \text{ rpm}$ $K = 10/3$ $B-10 \text{ std} = 1,00,000 \text{ hrs}$	03
	(b) Discuss importance of Devaloatilization	04
	(c) Compare Single Screw and Twin Screw Extruders	07
	OR	
Q.3	(a) Fill in the blanks:	03
	1. _____RGB gives highest efficiency	
	2. For manufacture of blends, _____extruder is used.	
	3. _____is main advantage of Induction heaters	
	(b) Discuss manufacture of braided hoses	04
	(c) Discuss various types of heating systems in screw extruders in detail.	07

Q.4	(a)	Draw a Nylon Screw and explain why this design is used?	03
	(b)	Discuss the difference between corotating and counter rotating twin screw extruders.	04
	(c)	Discuss in detail, the manufacture of LDPE FILMS. Give a neat line diagram.	07
OR			
Q.4	(a)	What is the significance of back pressure in extruders?	03
	(b)	Discuss grooved barrel technology in detail	04
	(c)	Discuss thrust bearing blocks of a single and twin screw extruders with diagrams	07
Q.5	(a)	Draw line diagram for manufacture of PVC Pipes	03
	(b)	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.	04
	(c)	Discuss raw material selection criteria for extrusion process in detail	07
OR			
Q.5	(a)	Explain significance of : Helix angle, Flight depth, pitch of an extruder screw	03
	(b)	What is nitriding? Draw line diagram to explain the process	04
	(c)	Discuss in detail, the manufacture of Wires and cables. Give a neat line diagram	07
