

Enrolment No./Seat No _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER-V (NEW) EXAMINATION – WINTER 2024

Subject Code:3152307

Date:28-11-2024

Subject Name:Plastics Extrusion Technology

Time:10:30 AM TO 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.
4. Simple and non-programmable scientific calculators are allowed.

		Marks
Q.1	(a) Define : Extrudate, Die Swell, Breaker plate	03
	(b) Fill in the blanks:	04
	1. Function of Screen pack is _____	
	2. Thrust bearing performs function of _____	
	3. Reduction gear box is a must in extruders due to _____	
	4. Twin Screw Extruders work on _____ principle.	
	(c) Differentiate between Single and Twin Screw Extruders.	07
Q.2	(a) Discuss , with a neat diagram, parts of single screw extruder.	03
	(b) Discuss about RAM Extruders.	04
	(c) With a neat line diagram, discuss manufacture of monofilaments.	07
	OR	
	(c) .Discuss manufacture of LDPE films, using neat line diagram.	07
Q.3	(a) Discuss types of Reduction Gear Boxes	03
	(b) Discuss with definition and signifance: L/D RATIO, Compression Ratio, Pitch, Helix Angle.	04
	(c) Discuss manufacture of HDPE Pipes with a neat line diagram.	07
	OR	
Q.3	(a) What is GODET?	03
	(b) Discuss thrust bearing block of twin screw extruders.	04
	(c) Discuss heating systems used on extruders.	07
Q.4	(a) Differentiate between blown films and Cast films.	03
	(b) Discuss manufacture of suction hoses with a diagram.	04
	(c) With a neat line diagram, discuss manufacture of Wires and Cables	07

OR

- Q.4**
- (a)** A plastic film, 0.15 mm thick, is required to have its orientation in the transverse direction thrice that in the machine direction. If the film blowing die has an outer diameter of 200mm and an inner diameter of 185 mm, estimate the blow-up ratio required and the lay flat film width. Neglect extrusion effects and assume there is no drawdown. **03**
 - (b)** Discuss about nitriding process **04**
 - (c)** Discuss in detail, criteria for selection of raw material for extrusion. **07**
- Q.5**
- (a)** Discuss AC v/s. DC Motors **03**
 - (b)** Discuss the manufacture of Sheets by extrusion process with a neat line diagram **04**
 - (c)** 1. Estimate the B-10 life of a thrust bearing given that: **07**
 $P = 50 \text{ MPa}$ $N = 130 \text{ rpm}$ $K = 10/3$
 B-10 std = 1,00,000 hrs
 2. Discuss breaker plate and screen pack.
- OR**
- Q.5**
- (a)** Tick the correct one: **03**
 - 1.Extruder machines work with
 - [a] AC motors
 - [b] DC motors
 - [c] AC motors with VFD
 - [d] both b and c
 - 2. Hopper cooling is required so that
 - [a] forward movement of granules in extruder is not affected
 - [b] to prevent formation of material lump at hopper throat
 - [c] heating in barrel walls causes material to fuse with cold material of hopper
 - [d] all of the above
 - 3.Processing of PTFE is done on
 - [a] Single Screw Extruders
 - [b] Twin screw extruders
 - [c] Ram Extruders
 - [d] Conical Extruders
 - (b)** Differentiate counter v/s. Corotating twin screw extruders **04**
 - (c)** Discuss in detail about Devolatilization in screw extruders **07**
