BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION SP/2025)

CLASS: BTECH **SEMESTER : VI**
BRANCH: CHEMICAL **SESSION : SP/2025**

SUBJECT: CL349 POLYMER PROCESSING

TIME: 02 Hours **FULL MARKS: 25**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 5 marks and total 25 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates**

			CO	BL
Q.1	Discuss the basic operation of the Extruder with a neat sketch. Also, draw a pressure profile along an extruder screw.	[4+1]	1	1
Q.2	A single screw extruder is to be designed with the following characteristics. L/D ratio = 24; Screw flight angle = 17.7°; Max. screw speed = 100 rev/min; Screw diameter = 40 mm; flight depth (metering zone) = 3 mm. If the extruder is to be used to process polymer melts with a maximum melt viscosity of 500 Ns/m^2, calculate a suitable wall thickness for the extruder barrel based on the von Mises yield criterion. The tensile yield stress for the barrel metal is 925 MN/m^2 and a factor of safety of 2.5 should be used.	[5]	5	3
Q.3	Explain the downstream Extrusion line to manufacture pipe with a neat sketch.	[5]	1	2
Q.4	Classify the various types of clamping systems in injection moulding with a neat sketch.	[5]	3	4
Q.5	Discuss the effect of material properties on Injection moulded product quality.	[5]	4	3

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