

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V (NEW) EXAMINATION – SUMMER 2021****Subject Code:2152301****Date:07/09/2021****Subject Name:Injection Molding Technologies****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 Injection Molding. List any four products made by Injection Molding.	03
	(b) Explain the startup & shut down mechanism of Injection Molding process.	04
	(c) List the advantages& disadvantages of Injection Molding process.	07
Q.2	(a) What is pre drying of a material & why is it necessary? List the materials which need predrying.	03
	(b) Explain the single stage plunger machine with a figure.	04
	(c) What is a nozzle? List the types of nozzles used in Injection molding and explain any one.	07
OR		
	(c) Explain the open loop & closed loop microprocessor controlled injection molding system.	07
Q.3	(a) Define i) Injection shot capacity ii) L/D ratio iii) Maximum Day light.	03
	(b) Draw the screw used to process PVC & explain its importance.	04
	(c) Compare injection molding of thermoplastics with injection molding of thermosets.	07
OR		
Q.3	(a) What is back pressure? Explain briefly.	03
	(b) Explain the process of melting of a material in an injection screw in all the three zones.	04
	(c) Compare hydraulic & toggle clamping mechanisms.	07
Q.4	(a) Calculate the clamping force of a press with a hydraulic clamp having 600mm diameter clamping cylinder & hydraulic line pressure is 2000kg/cm ² .	03
	(b) List the points of comparison between hydraulic and electric drive.	04
	(c) Explain the ring type non return valve with a neat sketch.	07
OR		
Q.4	(a) What is nitriding? Why is it necessary on screw and barrel?	03
	(b) With a neat graph explain the cycle time of injection molding process.	04
	(c) Draw a neat sketch of the standard screw and explain its terminologies.	07
Q.5	(a) What is MFI & how is it measured? Which range of MFI grade material is used for injection molding?	03
	(b) Briefly write the steps of a reciprocating screw type injection molding machine.	04
	(c) List any two causes and its remedies for the following defects in injection molded product i) Short shots ii) Bubbles & voids	07

OR

- Q.5** (a) Discuss about the safety measures to be followed while operating an injection molding machine. **03**
- (b) Draw PVT diagram & explain it briefly. **04**
- (c) Explain the Gas assisted injection molding technique with a neat sketch. **07**
