

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER– V (New) EXAMINATION – WINTER 2019****Subject Code: 2152301****Date: 25/11/2019****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.

		<b>MARKS</b>
<b>Q.1</b>	(a) Define i) Injection Molding ii) Injection cycle iii) Nozzle	<b>03</b>
	(b) Explain the startup and shutdown process of injection molding.	<b>04</b>
	(c) State the advantages and disadvantages of injection molding.	<b>07</b>
<b>Q.2</b>	(a) Draw and label the parts of an injection molding machine.	<b>03</b>
	(b) Compare the hydraulic & toggle system for clamping.	<b>04</b>
	(c) Draw and label the parts of a standard screw and explain its terminologies.	<b>07</b>
<b>OR</b>		
	(c) List the types of injection machine and explain the single stage plunger type machine.	<b>07</b>
<b>Q.3</b>	(a) What is nitriding? Why is it required for screw and barrel?	<b>03</b>
	(b) List the defects found in an injection molded product and give causes and remedies for any two defects.	<b>04</b>
	(c) Explain with a neat sketch the ring type non return valve.	<b>07</b>
<b>OR</b>		
<b>Q.3</b>	(a) What is purging? When is it necessary in injection molding.	<b>03</b>
	(b) Draw a neat sketch of double toggle clamping mechanism.	<b>04</b>
	(c) Explain the steps of a reciprocating screw type injection molding machine.	<b>07</b>
<b>Q.4</b>	(a) What is MFI? How is it important in selecting a material for injection molding.	<b>03</b>
	(b) Draw a PVT diagram and explain it briefly.	<b>04</b>
	(c) Explain with a neat sketch, the process of melting of plastic in a screw.	<b>07</b>
<b>OR</b>		
<b>Q.4</b>	(a) Explain the terms i) Hold on pressure ii) Back pressure iii) Injection shot capacity.	<b>03</b>
	(b) For a reciprocating screw type injection molding machine, list its injection end specifications.	<b>04</b>
	(c) List the types of nozzles and with a neat sketch explain the Standard nozzle.	<b>07</b>
<b>Q.5</b>	(a) Compare hydraulic and electric drive for screw.	<b>03</b>
	(b) Which type of screw is used to process Nylon? Explain it with a neat sketch.	<b>04</b>
	(c) Write a short note on Gas Assisted Injection Molding process.	<b>07</b>
<b>OR</b>		
<b>Q.5</b>	(a) Why is predrying of a material important before processing? Name the plastic materials which require predrying.	<b>03</b>
	(b) Compare injection molding of thermoplastics with injection molding of thermosets.	<b>04</b>
	(c) List the functions of microprocessor in injection molding machine. Explain open loop & closed loop control.	<b>07</b>

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