

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-V (NEW) EXAMINATION – WINTER 2018****Subject Code:2152301****Date:27/11/2018****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) (1) The L/D ratio for a general purpose screw is _____.	<b>03</b>
	(2) What is the function of a nozzle?	
	(3) Define melt flow index.	
<b>Q.2</b>	(b) (1) List any two molding defects of injection molding.	<b>04</b>
	(2) What is maximum day light of a mold?	
	(3) List the main types of clamping systems for injection molding.	
	(4) The clamping pressure should be more than the injection pressure (True & False)	
	(c) Define Injection Molding. List advantages and disadvantages of it.	<b>07</b>
<b>Q.2</b>	(a) Calculate the clamping force a press with a hydraulic clamp has a 600 mm diameter clamping cylinder and hydraulic line pressure is 2000kg/cm <sup>2</sup> .	<b>03</b>
	(b) Explain predrying of thermoplastic materials.	<b>04</b>
	(c) Explain basic principles of Reciprocating screw machines in detail with neat sketch.	<b>07</b>
<b>OR</b>		
	(c) List various directional control valves used in Injection Molding machine. Explain any one with neat sketch.	<b>07</b>
<b>Q.3</b>	(a) What is nitriding? Explain importance of screw nitriding.	<b>03</b>
	(b) Explain the start up and shut down procedure for injection molding process.	<b>04</b>
	(c) Compare: Injection Molding of Thermoplastic with Injection Molding of Thermosets.	<b>07</b>
<b>OR</b>		
<b>Q.3</b>	(a) What are the major causes of breakdown of plunger cylinders?	<b>03</b>
	(b) Explain the injection cycle.	<b>04</b>
	(c) Define: (1) Injection shot capacity (2) plasticizing capacity (3) back pressure (4) maximum day light (5) compression ratio (6) injection pressure (7) minimum day light.	<b>07</b>
<b>Q.4</b>	(a) List the advantages and disadvantages of toggle clamping.	<b>03</b>
	(b) Explain the needle type shut-off nozzle	<b>04</b>
	(c) List various functions carried out by the microprocessor of Injection molding machine. Also Explain about close loop and open loop control system.	<b>07</b>

**OR**

- Q.4** (a) State the functions of three zones of the injection screw. **03**  
(b) Compare hydraulic drive with electric drive. **04**  
(c) Explain about Gas Assist Injection molding process. **07**

- Q.5** (a) Explain about material selection criteria for injection molding process. **03**  
(b) Compare hydraulic clamping with toggle clamping (Any four points) **04**  
(c) Explain about pressure profile in cavity with suitable graph. **07**

**OR**

- Q.5** (a) Give causes and remedies of the following defects: **03**  
(1) Short-shots (2) warpage (3) weld line  
(b) For PVC which type of screw tip is used? Why? Explain it with neat sketch. **04**  
(c) Explain RIM process in detail. **07**

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