

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.

MARKS

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