| Seat No.: _ | Enrolment No |
|-------------|--|
| | GUJARAT TECHNOLOGICAL UNIVERSITY |
| | BE - SEMESTER-V(New) • EXAMINATION - WINTER 2016 |

Subject Code:2152301 **Subject Name:Injection Molding Technologies**

Time:10:30 AM to 01:00 PM **Total Marks: 70**

Date: 24/11/2016

Instructions:

- Attempt all questions.
 Make suitable assumptions wherever necessary.
- 3. Figures to the right indicate full marks.

| | | | MARKS |
|------------|------------|--|-------|
| Q.1 | | Short Questions | 14 |
| | 1 | Define Injection Molding. | |
| | 2 | What do you mean by a cycle time? | |
| | 3 | What is the function of a nozzle? | |
| | 4 | What is maximum day light of a mold? | |
| | 5 | The helix angle for a general purpose screw is | |
| | 6 | Define melt flow index. | |
| | 7 | What is back pressure? | |
| | 8 | The L/D ratio for a general purpose screw is | |
| | 9 | List the main types of clamping systems for injection molding. | |
| | 10 | List any two molding defects of injection molding. | |
| | 11 | Materials like and are | |
| | | hygroscopic in nature and require preheating. | |
| | 12 | 1 6 6 | |
| | 13 | The range of MFI for materials used for injection molding should be | |
| | 14 | The clamping pressure should be more than the injection pressure (True & False) | |
| Q.2 | (a) | Explain predrying of thermoplastic materials. | 03 |
| | (b) | · · · · | 04 |
| | | injection molding process. | |
| | (c) | List the advantages and disadvantages of injection molding process. | 07 |
| | | OR | |
| | (c) | With a neat sketch explain the single stage plunger machine. | 07 |
| Q.3 | (a) | | 03 |
| | (b) | Differentiate between injection molding of thermoplastics and injection molding of thermosets. | 04 |
| | (c) | With a neat sketch draw the general purpose screw and explain it parts. | 07 |
| | | OR | |
| Q.3 | (a) | What are the major causes of breakdown of plunger cylinders? | 03 |
| | (b) | Explain the injection cycle. | 04 |
| | (c) | Explain the basic principles of a reciprocating type screw | 07 |
| | | type machine | |
| Q.4 | (a) | State the functions of three zones of the injection screw. | 03 |
| | (b) | <u> </u> | 04 |
| | (c) | List the types of nozzles used in injection molding and | 07 |

explain the standard nozzle.

OR

| Q.4 | (a) | Calculate the clamping force if a press with a hydraulic | 03 |
|------------|------------|---|----|
| | | clamp has 500 m diameter clamping cylinder and | |
| | | hydraulic line pressure of 1800 kg/cm ² | |
| | (b) | List the advantages and disadvantages of toggle clamping. | 04 |
| | (c) | Write a short note on Gas assisted injection molding | 07 |
| | (C) | technique. | U/ |
| Q.5 | (a) | List various functions carried out by a microprocessor of | 03 |
| | | an injection molding machine. | |
| | (b) | Explain the needle type shut-off nozzle | 04 |
| | (c) | Explain the procedure of MFI Test with a neat sketch. | 07 |
| | | OR | |
| Q.5 | (a) | Define 1) Injection capacity 2) Injection rate 3) | 03 |
| • | , , | Plasticizing capacity | |
| | (b) | Explain about material selection criteria for injection | 04 |
| | | molding process. | |
| | (c) | Compare hydraulic clamping with toggle clamping | 07 |
| | | | |
