Seat No.: _____ Enrolment No._____

# GUJARAT TECHNOLOGICAL UNIVERSITY

**BE - SEMESTER–IV(New) EXAMINATION – SUMMER 2016**

**Subject Code:2142301** **Date:10/06/2016**

**Subject Name:Basic Plastic Processing and Thermal Engineering**

**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 |
|---|---|---|---|
| **Q.1** | | **Short Questions** | **14** |
| | **1** | Define Plastics Processing. | |
| | **2** | List the Plastic Processing Techniques used for manufacturing hollow products. | |
| | **3** | Blow molding is operated using high molding pressure where in injection molding the molding pressure is low.[True/false] | |
| | **4** | In Blow molding blowing pressure depends on which factors? | |
| | **5** | Curing means<br>(a) Material solidify under heat and pressure<br>(b) Material degrade (c) material injected during process (d) material cooled and become solid. | |
| | **6** | Which material cannot process in compression molding?<br>(a) PF (b) UF (c) MF (d) PTFE | |
| | **7** | What is importance of breathing in compression molding? | |
| | **8** | Transfer molding prefer over compression when (a) thick section(3.2 mm or more) is molded (b) section are very delicate (c) all of above | |
| | **9** | Which among this is not a thermoforming process<br>(a) pressure forming (b) drape forming (c) compression molding (d) mechanical forming | |
| | **10** | Define Thermoforming. | |
| | **11** | List the principal process steps for Rotational Molding. | |
| | **12** | In rotational molding process heating time depends on which factors? | |
| | **13** | Define conduction and convection. | |
| | **14** | Newton proposed the fundamental heat convection equation q=_____.<br>where q=average rate of heat transfer by convection J/s. | |
| **Q.2** | **(a)** | Define Blow molding. List and explain material characteristic required for the Blow molding process in brief. | **03** |
| | **(b)** | List the types of Blow molding process and list the basic process step for blow molding. | **04** |
| | **(c)** | Explain Intermittent Extrusion Blow molding process in detail with neat sketch. | **07** |
| | | **OR** | |
| | **(c)** | Explain the Injection Blow molding process in detail with neat sketch. | **07** |

| | | | |
|---|---|---|---|
| **Q.3** | **(a)** | What is bulk factor? Explain about importance of bulk factor for compression in brief. | **03** |
| | **(b)** | Explain flash type compression mold with neat sketch. | **04** |
| | **(c)** | List the type of transfer of transfer molding process. Explain any one in detail. | **07** |
| | | **OR** | |
| **Q.3** | **(a)** | Define (a) Blow up ratio (b) Thermal radiation | **03** |
| | **(b)** | What is parison programming? Explain importance of it in brief. | **04** |
| | **(c)** | List the advantages, disadvantages and application of transfer molding process. | **07** |
| **Q.4** | **(a)** | What is pre heating? What is the significance of pre-heating in compression molding? | **03** |
| | **(b)** | Define Thermoforming. List advantages of thermoforming. | **04** |
| | **(c)** | Why HIPS is the most preferable material for thermoforming process? Explain in detail. | **07** |
| | | **OR** | |
| **Q.4** | **(a)** | List the various thermoforming processes. | **03** |
| | **(b)** | Explain snap back forming process with neat sketch. | **04** |
| | **(c)** | Explain plug-assist forming process with neat sketch. | **07** |
| **Q.5** | **(a)** | Define Rotational Molding. List advantages of it. | **03** |
| | **(b)** | Explain about mold materials for rotational molding. | **04** |
| | **(c)** | Explain Stefan Boltzmann law. | **07** |
| | | **OR** | |
| **Q.5** | **(a)** | List any three faults and remedies for Rotational molding. | **03** |
| | **(b)** | Explain Rotational molding process in brief. | **04** |
| | **(c)** | List the types of Heat Exchanger.Explain any onre in detail. | **07** |

**********