Seat No.: _____ Enrolment No._____

# GUJARAT TECHNOLOGICAL UNIVERSITY

**BE - SEMESTER–VI • EXAMINATION – SUMMER • 2015**

**Subject Code: 162503** **Date:14/05/2015**

**Subject Name: Metal Forming Processes**

**Time:10.30am-01.00pm** **Total Marks: 70**

**Instructions:**

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

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|---|---|---|---|
| **Q.1** | **(a)** | Explain Metallurgical aspects of Metal Forming using Slip and Twinning Mechanics of plastic deformation with the help of neat sketch. | **07** |
| | **(b)** | What do you mean by Semi-Hot Working? Explain its effect on Mechanical Properties. | **07** |
| **Q.2** | **(a)** | Explain various types of fracture and its effect on service life of parts? | **07** |
| | **(b)** | What is the cause that fails material by fatigue? Draw fatigue failure curve. | **07** |
| | | **OR** | |
| | **(b)** | Define Creep. Explain factors affecting creep resistance. | **07** |
| **Q.3** | **(a)** | With neat sketch explain planetary rolling mill. What is the function of back-up roll? | **07** |
| | **(b)** | List out various defects in rolled product. Explain any TWO with its cause and remedies. | **07** |
| | | **OR** | |
| **Q.3** | **(a)** | Explain following terminology in the context of rolling. (i) Neutral plane (ii) Backward slip (iii) Forward slip (iv) Angle of Bite (v) Rolling Load (vi) Separating Force (vii) Draft | **07** |
| | **(b)** | Explain the procedure of Roll Pass Design. | **07** |
| **Q.4** | **(a)** | What is the difference between open die and closed die forging? | **07** |
| | **(b)** | Explain various defects its causes and remedies for forged products. | **07** |
| | | **OR** | |
| **Q.4** | **(a)** | Can all the known materials be forged? Compare a forged component with a cast component. | **07** |
| | **(b)** | Explain Force Analysis in Forging Process with the help of neat sketch. | **07** |
| **Q.5** | **(a)** | Classify extrusion processes. Explain Hydrostatic extrusion with neat sketch. | **07** |
| | **(b)** | Explain wire drawing operation with its schematic diagram. | **07** |
| | | **OR** | |
| **Q.5** | **(a)** | Give the full form of HERF. Describe the process with its neat sketch. | **07** |
| | **(b)** | What is elastic recovery in bending process? Explain the same using V-bending. | **07** |

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