

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VI (NEW) - EXAMINATION – SUMMER 2018

Subject Code:2162508

Date:01/05/2018

Subject Name: Metal Forming Technology

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.

- Q.1** (a) Classify the Metal Forming Processes. Explain any one of them. **03**
(b) Explain the concept of Strain hardening. **04**
(c) Differentiate between Cold Working and Hot Working of metals and explain with their advantages and disadvantages. **07**

- Q.2** (a) What is the significance of Recrystallization temperature in metal working? **03**
(b) Explain various factors affecting Plastic deformation. **04**
(c) With the help of schematic diagram explain Slip and Twinning mechanism that cause plastic deformations in metals and alloys. **07**

OR

- (c) Explain various yield criteria in metal forming process & highlight their significance. **07**
- Q.3** (a) Explain the Rolling defects with sketch. **03**
(b) Explain Two-High, Three-High & Four-High Rolling Mills with a neat sketch. **04**
(c) Explain open die & closed die Forging process with a neat sketch **07**

OR

- Q.3** (a) Explain the principle of Forging and classify the types of Forging process. **03**
(b) Describe various forging defects. **04**
(c) A steel plate 20 mm thick is to be rolled to 14 mm in a four high mill having roll diameter 480 mm. If yield stress is 12 Kg/mm² Determine:
(a) Angle of bite **07**
(b) Coefficient of friction if this is the maximum reduction possible.
(c) Position of neutral section
(d) Forward & Backward slip

- Q.4** (a) Sketch and explain Rotary swaging process. **03**
(b) Explain the Hydrostatic Extrusion with a neat sketch. **04**
(c) Write short notes on **07**
(a) Ironing
(b) Spinning
(c) Cupping
(d) Piercing

OR

- Q.4** (a) How the forging process is advantageous when compared to casting process. **03**

- (b) Explain Coining & Embossing process with a neat sketch. **04**
(c) Differentiate Forward and Backward Extrusion with a neat sketch. **07**
- Q.5** (a) Describe the piercing method of making seamless tubes. **03**
(b) What is Bending? Explain various types of Bending with a neat sketch. **04**
(c) Classify the Drawing processes. Differentiate Tube Drawing Process and Wire Drawing process with a neat sketch. **07**
- OR**
- Q.5** (a) Sketch and explain Deep Drawing process. **03**
(b) Define following terms **04**
1. Blanking
2. Punching
3. Notching
4. Lancing
(c) Describe Magnetic Pulse Forming process with a neat sketch? **07**
Explain advantages, limitations and applications of the above process.
