

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
ME – SEMESTER II (NEW) – • EXAMINATION – SUMMER 2016

Subject Code: 2722801

Date: 25/05/2016

Subject Name: Mechanics of Metal Forming

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) Explain importance of metal forming in manufacturing? State various metal forming theory. **07**
- (b) Derive the relationship between yield strength in Shear and Yield strength in tension according to Tresca's hypothesis. **07**
- Q.2** (a) Explain incremental plastic strain. **07**
- (b) Explain plastic instability in tension test **07**
- OR**
- (b) What is the importance of Mohr's circle in analysis of metal forming? **07**
- Q.3** (a) Explain the application of Upper bound theory in extrusion. **07**
- (b) What is the importance of bulge test? Explain it. **07**
- OR**
- Q.3** (a) Define Strain Rate and Super Plasticity. **07**
- (b) Explain the importance of upper bound and lower bound theory in forging. **07**
- Q.4** (a) By Slab Analysis for Sheet Drawing, Prove $P=2K \cdot x$. Write the assumptions. **07**
- (b) Define Plane Strain. Show the relationship between σ and slip lines. **07**
- OR**
- Q.4** (a) Explain slip line field theory. **07**
- (b) Explain localized necking in biaxial stretching. **07**
- Q.5** (a) Explain CAD/CAM applications in Extrusion, Forging and Sheet Metal Forming. **07**
- (b) Explain bending in sheet metal forming. Show various stresses in bending process. **07**
- OR**
- Q.5** (a) Explain about Hills Anisotropic Plasticity Theory. **07**
- (b) What is the importance of work hardening? Explain it. **07**
