

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – II • EXAMINATION – SUMMER • 2014

Subject code: 1722801

Date: 16-06-2014

Subject Name: Mechanics of Metal Forming

Time: 02:30 pm - 05:00 pm

Total Marks: 70

Instructions:

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

- Q.1** (a) Discuss the fundamental condition for stress strain relations in plastic deformation. **07**
(b) Explain importance of metal forming in manufacturing. **07**
- Q.2** (a) What is work hardening? How does it affect the mechanical properties? **07**
(b) Discuss bulge test. Explain its importance. **07**
- OR**
- (b) Discuss about Baushinger effect. **07**
- Q.3** (a) Discuss the role of CAD/CAM applications in sheet metal forming. **07**
(b) Explain super plasticity and strain rate. **07**
- OR**
- Q.3** (a) Explain the importance of upper bound and lower bound theory in forging. **07**
(b) What do you mean by plastic instability in tension test? **07**
- Q.4** (a) Discuss about von-mises yield condition. **07**
(b) Define Plane Strain. Show the relationship between $\dot{\epsilon}$ and $\dot{\gamma}$ slip lines. **07**
- OR**
- Q.4** (a) Discuss about localized necking in biaxial stretching. **07**
(b) Explain the slab analysis for sheet drawing. **07**
- Q.5** (a) Discuss about bending in sheet metal process with various stresses in bending. **07**
(b) Compare engineering strain and true strain. **07**
- OR**
- Q.5** (a) What is the importance of Mohr's circle in analysis of metal forming? **07**
(b) Discuss various extrusion processes with applications. **07**
