

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII (NEW) - EXAMINATION – SUMMER 2017

Subject Code: 2171913

Date: 29/04/2017

Subject Name: Metal Forming Analysis(Department Elective - I)

Time: 02.30 PM to 05.00 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) Define the following terms: (i) Hot forming, (ii) Cold Forming, (iii) Yield Strength, (iv) Flow Stress, (v) Strain Rate, (vi) Principal Stress, (vii) Plasticity. **07**
(b) Give short note on Two-Dimensional Mohr's circle method for stress analysis. **07**
- Q.2** (a) Derive the relationship between Yield strength in Shear and Yield strength in Tension according to Tresca's hypothesis of yielding. **07**
(b) What is work hardening? How does it affect the mechanical properties? **07**
- OR**
- (b) Derive the relationship between Yield strength in Shear and Yield strength in Tension according to Von Mises' hypothesis of yielding. **07**
- Q.3** (a) Explain Isotropic and Kinematic work hardening with neat sketches. **07**
(b) Explain about importance of Upper bound and Lower bound theorem in metal forming. **07**
- OR**
- Q.3** (a) Give short note on Forging process with its classification. **07**
(b) Explain metal flow during forging of a circular disc. **07**
- Q.4** (a) Explain Extrusion and Wire Drawing processes in brief. **07**
(b) Explain about Rolling process in brief with its detail classification. **07**
- OR**
- Q.4** (a) Explain analysis of compression of circular disc with slab method. **07**
(b) Give list of methods used for calculation of extrusion load and explain any one of them in brief with neat sketch. **07**
- Q.5** (a) Give list of different sheet metal forming processes and explain Blanking operation with neat sketch. **07**
(b) Give short note on friction and lubrication in forming processes. **07**
- OR**
- Q.5** (a) Explain methods of changing Roll Camber with neat sketches. **07**
(b) Explain about Compound and Progressive dies operation. **07**
