

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**BE – SEMESTER–VIII • Remedial EXAMINATION – WINTER 2013**

**Subject Code: 182101****Date: 18/09/2013****Subject Name: Metal Working Processes****Time: 03:00 pm – 05:30 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 the term 'Residual stresses'. How it's produced in a metal? Describe the treatment to be given to eliminate these stresses. **07**
- (b) Explain the following terms: **07**
- |       |       |      |               |
|-------|-------|------|---------------|
| Ingot | Plate | Bar  | Neutral Point |
| Bloom | Sheet | Rod  | Angle of bite |
| slab  | Strip | Wire |               |
- Q.2** (a) What is forging? Explain forging operations with neat sketch in detail. **07**
- (b) Explain in detail the defects caused in the rolling operation with neat sketch. **07**
- OR**
- (b) Explain the stresses in the forging of plate under condition of plane strain with neat sketch. **07**
- Q.3** (a) What are the extrusion process variables? Explain in detail. **07**
- (b) What is Rolling? Classify and explain in detail the different types of rolling mills. **07**
- OR**
- Q.3** (a) If contact angle in rolling is  $17^\circ$ , diameter of roll is 900 mm than calculate maximum reduction possible by rolling, length of arc of contact. Also if radial force is 150 N than calculate frictional force. **07**
- (b) Explain in detail the forging defects. **07**
- Q.4** (a) Explain the stretch forming operation with neat sketch. **07**
- (b) Explain redrawing methods with neat sketch. **07**
- OR**
- Q.4** (a) Write short note on super plasticity in sheet metal working. **07**
- (b) Write short note on: **07**
- I. Deep drawing
  - II. Spinning
- Q.5** (a) Define following terms: **07**
- |          |          |               |
|----------|----------|---------------|
| Blanking | Parting  | Shaving       |
| Punching | Slitting | Fine blanking |
| Notching | Trimming |               |

- (b) i) Roll pressure at neutral point is \_\_\_\_\_ . 07  
ii) Maximum value of residual stresses possible is fracture stresses.  
TRUE/FALSE  
iii) Temperature in deformation process depends on Die Temperature.  
TRUE/FALSE  
iv) In forging as L/h ration increase in flash design, forging load  
\_\_\_\_\_ .  
v) Extrusion ratio \_\_\_\_\_ with decreases in temperature for given  
extrusion pressure.  
vi) Actual reduction in diameter occurs at approach angle in wire  
drawing. TRUE/FALSE  
vii) What is the relation between die and container for indirect  
extrusion process?

**OR**

- Q.5** (a) Write short note on thermocouple. 07  
(b) Explain in detail wire drawing defects. 07

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