

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**ME – SEMESTER – II • EXAMINATION – SUMMER 2017**

**Subject Code: 2722806****Date: 29/05/2017****Subject Name: Sheet Metal Process****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) What is Sheet Metal Forming Process? Classify Sheet Metal Process. **07**  
 (b) Short note on Significant Variables in Sheet Metal Forming Process. **07**
- Q.2** (a) Explain the Product Design for Sheet Metal Processes. **07**  
 (b) Describe the factor affecting of forming limit curve. **07**
- OR**
- (b) Which are the methods to determine flow stress of Sheet materials? Explain the Hydraulic Bulge Test for Sheet Metal. **07**
- Q.3** (a) Differentiate between Plasma Cutting & Bending Process versus Laser Cutting & Bending Process. **07**  
 (b) Assume the bend V-profile will comply with the following data: **07**  
 Profile angle  $\alpha_2 = 108^\circ$   
 Bend radius  $R_f = 8 \text{ mm}$   
 Material 7075-T  
 Material thickness  $T = 2 \text{ mm}$ .  
 Calculate the nose punch radius ( $R_t$ ) and the punch angle ( $\alpha_f$ ).
- OR**
- Q.3** (a) A hard temper aluminium sheet, 2 mm thick, has a flow stress of 120 MPa that is approximately constant. Determine the moment per unit width to bend the sheet to the limiting elastic state. What is the radius of curvature at this moment? Determine the fully plastic moment if the sheet is bent further. The elastic modulus is 70 GPa and Poisson's ratio is 0.3. **07**  
 (b) Explain the Stretch Forming Process with neat sketch. **07**
- Q.4** (a) Short note on mode of Deformation in Sheet Metal Forming. **07**  
 (b) Short note on different methods of Sheet Joining Processes. **07**
- OR**
- Q.4** (a) What is Hydroforming? Describe Low pressure or sequential hydroforming. **07**  
 (b) What is Warm Forming of Aluminum Alloy? Justify the Process. **07**
- Q.5** (a) Describe the construction & working of Hydraulic Press with their important characteristics. **07**  
 (b) Why Sheet Metal Process industries use Computer Application? **07**
- OR**
- Q.5** (a) Short note on Rapid Prototyping for Sheet Metal Forming. **07**  
 (b) Short note on Finite Element Simulation of Hemming operations. **07**

\*\*\*\*\*