

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**ME Semester –II Examination Dec. - 2011**

Subject code: 1720808

Date: 16/12/2011

Subject Name: Manufacturing Processes and Analysis

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 marks.

- Q.1** (a) Explain the slab method for analysis of metal forming process and derive its equation. **07**
- (b) (i) Explain effected parameter on MRR of AJM process. **03**  
(ii) Write similarity and difference between AJM and USM. **04**
- Q.2** (a) Explain permanent mould casting and full mould casting. **07**
- (b) A metal component  $30 \times 36 \times 160$  mm having a yield stress of 0.9 Kg/mm<sup>2</sup> is to be pressed between flat dies to a size  $8 \times 100 \times 160$  mm. If  $\mu = 0.26$ , calculates the following (a) pressure at center, (b) pressure at edge, (c) total forging load. **07**
- OR**
- (b) Describe hydrostatic pressure and Residual stresses in forming. **07**
- Q.3** (a) Explain centrifugal casting and give its advantage, disadvantage and limitation over other type of casting. **07**
- (b) Explain control of distortion in weldments. **07**
- OR**
- Q.3** (a) Explain stress-strain relation with different materials. **07**
- (b) Defined weldability and explain weldability of cast irons. **07**
- Q.4** (a) Write methods of improving fatigue life of welded structures and explain any one method. **07**
- (b) Explain hot machining and deep hole drilling. **07**
- OR**
- Q.4** (a) Explain principles of weld joint design. **07**
- (b) Define Rapid prototyping with basic process step. **07**
- Q.5** (a) Explain cryogenic machining with its working principle, application and limitation. **07**
- (b) Explain Ballistic particle manufacturing with its advantages and limitation. **07**
- OR**
- Q.5** (a) Write basic mechanism, transfer media, energy source and process when used mechanical, chemical, electro-chemical and thermo-electric energy. **07**
- (b) Explain solid-base curing method with its advantages and disadvantages. **07**