

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-IV (New) EXAMINATION – WINTER 2015

Subject Code:2141908

Date:04/01/2016

Subject Name: MANUFACTURING PROCESSES -II

Time: 2:30pm to 5:00pm

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) Give broad classification of various manufacturing processes. Also describe the factors affecting the selection of manufacturing process for a product. **07**
- (b) Draw the schematic sketch of Gating system for casting. Mention the working function of each Gating system elements. **07**
- Q.2** (a) What is pattern? Explain the following patterns with a schematic diagram. **07**
(1) Gated Pattern (2) Follow board Pattern (3) Split Pattern
- (b) Explain the Dump box shell moulding process with sketch. **07**
- OR**
- (b) During sand mould casting process, it took 155 sec for a cube-shaped casting to solidify. The cube is 50 mm of side. **07**
(1) Determine the value C_m of the mold constant in Chvorinov's Rule.
(2) If the same alloy and mold type were used, find the total solidification time for a cylindrical casting in which the radius $r = 15$ mm and length $h = 50$ mm.
- Q.3** (a) Explain the working principles of Oxy-acetylene gas welding and gas cutting processes. Also differentiate between nozzles used for Oxy-acetylene gas welding and gas cutting process, using sketch. **07**
- (b) Explain the common welding defects by stating their causes and their remedies. **07**
- OR**
- Q.3** (a) Write short note on Electron Beam welding. **07**
- (b) Describe explosive welding process with its advantages and limitations. **07**
- Q.4** (a) Differentiate between forward extrusion and backward extrusion. **07**
- (b) Explain the working principle of Resistance welding. Differentiate between Spot and Seam Welding processes. **07**
- OR**
- Q.4** (a) Explain the principle and operation of Rolling process. **07**
- (b) Describe the piercing and blanking processes. Also explain the terms: Ingot, slab, bloom and billet. **07**
- Q.5** (a) Using open-die forging operation, a solid cylindrical piece of S.S. having 100 mm diameter and 72 mm height is reduced in the height to 60 mm at room temperature. Assuming the coefficient of friction as 0.22 and the flow stress for this material is 1000 MPa, calculate the forging force at the end of stroke. **07**
- (b) Explain Injection moulding process for plastic, by stating its principle of operation, advantages, limitation and applications. **07**
- OR**
- Q.5** (a) Distinguish between thermoforming process and extrusion process for plastics. **07**
- (b) Completely describe the metal matrix composite processing methods (any two). **07**
