

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**DIPLOMA ENGINEERING – SEMESTER – 8<sup>th</sup> • EXAMINATION SUMMER • 2015**

**Subject Code: 385506**

**Date: 30-04-2015**

**Subject Name: Advance Materials and Metallurgy**

**Time: 10.30 AM TO 01.00 PM**

**Total Marks: 70**

**Instructions:**

1. Attempt All questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Each question carry equal marks (14 marks)

- Q.1** (a) Describe Scope of A.M.M. in Fabrication Industry. **07**  
(b) Prepare tabulated form showing SEVEN Names of alloying element, Percentage range and Effect on Properties. **07**
- Q.2** (a) Describe any ONE type of Steel making Process with neat sketch. **07**  
(b) Describe Metallurgy of Steel with its Microstructure. **07**
- OR
- (b) State meaning of carbon reaction. **07**
- Q.3** (a) Define the term "Alloy". State significance of alloy design. **07**  
(b) Describe meaning of Single Phase, Dual Phase and Multi phase materials. **07**
- OR
- Q.3** (a) Define and Explain Precipitation, Particle coarsening and Recrystallization. **07**  
(b) Describe Concept and Steps of alloy Designing with flow Diagram. **07**
- Q.4** (a) Draw neat sketch of Super Critical Boiler and Prepare list of its parts with their advanced materials used. **07**  
(b) Draw neat sketch of Cryogenic Vessel and Prepare list of its parts with their advanced materials used. **07**
- OR
- Q.4** (a) Draw neat sketch of Nuclear Vessel and Prepare list of its parts with their advanced materials used. **07**  
(b) Draw neat sketch of Cold Stretched Vessel and Prepare list of its parts with their advanced materials used. **07**
- Q.5** (a) Draw Cupola Furnace, Show its zones and Describe its working. **07**  
(b) Describe importance of Reduction Ratio, Raw Material Selection and Forging Temperature for quality of forged product. **07**
- OR
- Q.5** (a) Describe the terms "Solidification" and "Segregation" with respect to Casting. **07**  
(b) Describe different Properties of Cupronickel Materials. **07**

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