

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- VIth SEMESTER-EXAMINATION – MAY- 2012****Subject code: 162104****Date: 17/05/2012****Subject Name: Advanced Materials and Applications****Time: 10:30 am – 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.

- Q.1** (a) What is stainless steel? Explain any two stainless steels in brief. **07**
(b) Short note on hadfield Mn Steel **07**

- Q.2** (a) Write short note on following. **07**
1. Cryogenic materials. 2. Maraging Steel
(b) What are shape memory alloys? Write properties and applications. **07**

OR

- (b) What are different techniques used for producing metallic glasses? Explain **07**
Melt spinning technique in detail.

- Q.3** (a) Write short note on following. **07**
1. Free Cutting steel 2. Trip steel

- (b) What are different properties and applications of Magnetic materials? **07**

OR

- Q.3** (a) Short note on Ni base and Fe base super alloys. **07**
(b) Write the applications of Magnesium and its alloys from metallurgical point **07**
of view.

- Q.4** (a) What are methods for producing Nano materials? Explain any one of them **07**
(b) What are Aerospace materials? List important properties required in **04**
aerospace industry.
(c) Explain different mechanisms by which high strength and creep resistance **03**
are achieved by super-alloys.

OR

- Q.4** (a) Write properties and application of Titanium and its alloys **07**
(b) Compare Semiconducting and Superconducting materials. **07**

- Q.5** (a) What are different properties, Applications and Limitations of Biomaterials? **07**
(b) What is Nano material? Write note on Carbon Nano tube. **07**

OR

- Q.5** (a) What are super-alloys? Short note on Co base super alloys? **07**
(b) Short note on Ni- hard alloy cast iron **07**
