

**GUJARAT TECHNOLOGICAL UNIVERSITY****Diploma Engineering - SEMESTER-III • EXAMINATION – SUMMER 2013****Subject Code: 335502****Date: 11-06-2013****Subject Name: Material and Metallurgy****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.
4. English version is considered to be Authentic.

- Q.1** (a) Define the term “Materials “, “Materials science” and “Metallurgy”. **07**  
Explain importance of metallurgy for a fabrication engineer.
- (b) Classify the engineering materials in chart form **07**
- Q.2** (a) List different properties of material and explain different **07**  
technological properties of metal
- (b) Draw commercial forms of metal and write its IS number and **07**  
application in table format
- OR**
- (b) What is alloy steel? Explain advantage and limitation of alloy steel. **07**
- Q.3** (a) Explain effect of different alloying element on properties of steel. **07**
- (b) What is stainless steel? Explain chemical composition, properties **07**  
and application of Austenitic and Duplex Stainless steel.
- OR**
- Q.3** (a) Compare Cast Iron, Wrought Iron, Low Carbon Steel And High **07**  
Carbon Steel.
- (b) Explain different variable affecting fatigue life of a material. **07**
- Q.4** (a) Explain properties and application of Titanium. **07**
- (b) Write properties and application of Plastic. **07**
- OR**
- Q. 4** (a) Write definition of **07**  
(1) Crystal (2) Structure (3) Space lattice (4) Unit cell (5) Ion  
(6) Atom (7) Bonds
- (b) Explain SC, BCC, FCC, HCP, crystal structure of metal With neat **07**  
sketch
- Q.5** (a) Draw neat sketch of IC diagram and write three important reactions. **07**
- (b) Write limitation of IC diagram and Draw neat sketch of TTT **07**  
diagram.
- OR**
- Q.5** (a) Define the “heat treatment process”, classify it and explain purpose **07**  
of heat treatment.
- (b) Write brief note on ASME Sec-2. **07**

\*\*\*\*\*