Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

Diploma Engineering Semester –III Examination Dec. 2011

Subject code: 335502 **Date: 23/12/2011**

Subject Name: Materials & Metallurgy

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.**
4. **English version is considered Authentic.**

Q.1 14

(a) Classify the engineering material in chart form.

(b) Explain stress-strain curve with neat sketch. Explain following terms w.r.t stress –strain curve.

1. Yield strength.
2. Ultimate strength.
3. % Reduction in area
4. Breaking strength

Q.2

(a) List different properties of material. Explain optical, physical & technological properties of Mild Steel. 07

(b) Define the term "cladding". State uses of cladded material 07

OR

(b) What do you understand by the term 'Alloy steel'? State five alloying elements with suitable examples. 07

Q.3

(a) Explain effect of different alloying element on cast iron. 07

(b) Different between ferrous metal & non-ferrous Metals 07

OR

Q.3 (a) Explain characteristics & application of aluminum 07

(b) Explain types & mechanism of fracture. 07

Q.4

(a) Explain ASME SEC-2. 07

(b) Explain properties, types and application of Insulating material. 07

OR

Q. 4 (a) Explain annealing & normalizing in detail. 07

(b) Define following terms. 07

a) Crystallography
b) Crystal
c) Structure
d) Space lattice
e) Unit cell
f) Solid solution
g) Phase diagram

Q.5

(a) Explain IC diagram with neat sketch. 07

(b) Describe sequential steps to prepare a specimen for microstructure examination 07

OR

Q.5 (a) Explain Trinocular metallurgical microscope with neat sketch 07

(b) Explain TTT diagram with neat sketch. 07

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