

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- VIIth SEMESTER-EXAMINATION – MAY/JUNE- 2012

Subject code: 172104

Date: 28/05/2012

Subject Name: Alloy Design

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.

Q.1 (a) Explain objectives and basic terms related to design of experiments. **07**
(b) Discuss different types of cooling curves with neat sketches with suitable example preferably. **07**

Q.2 (a) Discuss the activities in engineering design. **07**
(b) Critically discuss the variations of shape, size and distribution of second phase on mechanical properties of material. **07**

OR

(b) What do you mean by composite material? Classify it and briefly explain Metal Matrix composite with suitable example. **07**

Q.3 (a) Explain the terms: System, Phase, Component, Matrix, Dispersed Phase, Particle and Fiber with suitable example. **07**
(b) Discuss the advantages of composite material over single phase material. **07**

OR

Q.3 (a) Explain continuous and discontinuous fiber alignment. What is their effect on properties? **07**
(b) Discuss Polymer Matrix composite materials with their advantages. **07**

Q.4 (a) What is dual phase steel? Draw microstructure of dual phase steel. Compare it with plain carbon steel. **07**
(b) What is recrystallization? Give its advantages. **07**

OR

Q.4 (a) Explain fatigue phenomenon with S-N curve. What is endurance limit? **07**
(b) Discuss characteristics and applications of High Strength Low Alloy steel. **07**

Q.5 (a) Explain three stages of creep with sketch. List creep resisting materials. **07**
(b) Write a short note on high speed steel. **07**

OR

Q.5 (a) Discuss about super alloys with their applications. **07**
(b) Write a short note on had field steel. **07**
