

Seat No.: _____
No. _____

Enrolment

GUJARAT TECHNOLOGICAL UNIVERSITY
BE SEMESTER– 7th EXAMINATION – SUMMER 2015

Subject Code:172104

Date:04/05/2015

Subject Name:Alloy Design

Time: 02.30PM-05.00PM

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) Draw neat sketch of stress strain curve and explain stress, strain, stiffness and toughness. **07**
(b) Explain the activities involved in engineering design. **07**

- Q.2** (a) Explain objectives and basic terms related to design of experiments. **07**
(b) Explain dual phase steel with their advantages. **07**

OR

- (b) With suitable example explain the phenomena of age hardening. **07**

- Q.3** (a) Define & classify composite material with suitable example. **07**
(b) Discuss the effect of recovery, recrystallization and grain growth on mechanical properties with neat sketch. **07**

OR

- Q.3** (a) Discuss the effect of size, shape and distribution of second phase on mechanical properties of alloys. **07**
(b) Explain effect of matrix on properties of materials. **07**

- Q.4** (a) Explain solidification of metal with necessary figure. **07**
(b) Write short note on High Strength Low Alloy Steel (HSLA). **07**

OR

- Q.4** (a) Compare Al based alloys to steel. **07**
(b) Write short note on High speed steels. **07**

- Q.5** (a) Briefly explain single and multi phase materials. **07**
(b) Define fatigue and explain fatigue curve. **07**

OR

- Q.5** (a) Explain creep mechanism using creep curve. **07**
(b) Write short note on Maraging steels. **07**
