

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-III (OLD) EXAMINATION – WINTER 2018****Subject Code:133403****Date:01/12/2018****Subject Name:Engineering Materials And Metallurgy****Time:10:30 AM TO 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) Classify phase diagram. Draw and explain about cooling curve for pure metal. **07**
- (b) Write the purpose of alloying. Write the advantages and disadvantages of Alloy Steel. **07**
- Q.2** (a) Sketch and explain the Iron – Iron Carbide equilibrium diagram. **07**
- (b) Explain about Normalizing and its purpose. **07**
- OR**
- (b) Distinguish between Thermoplastics and Thermosetting plastics with suitable example. **07**
- Q.3** (a) Write the procedure to conduct Impact Testing with neat sketch. **07**
- (b) Write the effect of Silicon and Vanadium as an alloying element to add on Steel. **07**
- OR**
- Q.3** (a) Write the effect of Tungsten and Manganese as an alloying element to add on Steel. **07**
- (b) Sketch and explain the Jominy end-quench hardenability test and Jominy curve. **07**
- Q.4** (a) Write the characteristics, properties and uses of Magnesium alloy. **07**
- (b) Define Carburizing. Write the process, characteristics and uses of Carburizing. **07**
- OR**
- Q.4** (a) Write the stages of heat treatment process. Write short notes on Annealing. **07**
- (b) Define Hardening. Write short notes on Hardening and its procedure. **07**
- Q.5** (a) Write the steps to construct Isothermal transformation diagram (TTT) with sketch. **07**
- (b) How to determine Creep limit by using Creep Testing Method with procedure. **07**
- OR**
- Q.5** (a) Explain in brief about Composite materials and its properties. **07**
- (b) Write the procedure for measuring Hardness by using Rockwell Test with a sketch. **07**

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