| Seat No.: |                         | D.: Enrolment No  | -        |
|-----------|-------------------------|---|----------|
| Su<br>Ti  | abjec<br>ime:<br>struct | GUJARAT TECHNOLOGICAL UNIVERSITY BE - SEMESTER-III (OLD) - EXAMINATION – SUMMER 2017 ct Code: 133403 Date: 05/06/20 ct Name: Engineering Materials and Metallurgy 10:30 AM to 01:00 PM Total Marks: ions: 1. Attempt all questions. 2. Make suitable assumptions wherever necessary. 3. Figures to the right indicate full marks. |          |
| Q.1       | (a)<br>(b)              | Draw and explain the cooling curve for pure iron. Define Gibb's Phase rule. Discuss in brief about effect of Mo, Mn & Si alloy addition on Steel.   | 07<br>07 |
| Q.2       | (a)                     | OR Explain the graphic representation of Iron – Carbon Equilibrium and brief how the transformation takes place?  | 07       |
|           | <b>(b)</b>              | Explain in brief about the Bain's curve (TTT) with neat sketch.  OR   | 07       |
|           | <b>(b)</b>              | Explain in brief about Super conductors and its properties.  OR   | 07       |
| Q.3       | (a)<br>(b)              | Define fatigue test. Explain the fatigue testing procedure with sketch.  Define Hardenability. Write any two factors affecting Hardenability.  Write any one method to determine Hardenability.  OR   | 07<br>07 |
| Q.3       | (a)                     | How do you measure Hardness by using Brinell Test? Write the procedure of Brinell Hardness Testing.   | 07       |
|           | <b>(b)</b>              | Write short notes about Carbonitriding & Induction hardening?  OR   | 07       |
| Q.4       | (a)<br>(b)              | Write the objectives and test procedure of Creep Testing with neat sketch. Define Normalizing and write the Normalizing procedure. Write any four quenching medium.   | 07<br>07 |
| Q.4       | (a)<br>(b)              | OR  Define Cyaniding. Write the cyaniding process, characteristics and uses.  Define polymer. Write any three polymer materials for Commodity,  Engineering and Specialty materials with corresponding applications.  OR  | 07<br>07 |
| Q.5       | (a)<br>(b)              | Discuss in brief about effect of Ti, V & W alloy addition on Steel.  Write the properties, applications and types of Nickel and its alloys & cobalt   | 07<br>07 |

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(a) Explain how Hardenability is measured by using Jominy end quench test with

**(b)** Write short notes about bio degradable plastics with examples.

OR

and its alloys.

the neat sketch.

**Q.5** 

**07** 

**07** 

**07**