

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

## GUJARAT TECHNOLOGICAL UNIVERSITY

Diploma Engineering - SEMESTER-III • EXAMINATION – SUMMER • 2015

**Subject Code: 3335503**

**Date: 06-05-2015**

**Subject Name: Materials & Metallurgy**

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

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|-----|-----|--|----|
| Q.1 | (a) | Classify the engineering materials in chart form   | 07 |
|     | (b) | List different mechanical properties of materials and explain any five   | 07 |
| Q.2 | (a) | What is alloy steel? Explain advantage and limitation of alloy steel.  | 07 |
|     | (b) | Explain effect of different alloying element on properties of steel.   | 07 |
|     |     | OR   |    |
|     | (b) | Explain chemical composition, properties and application of Austenitic and ferritic stainless steel.   | 07 |
| Q.3 | (a) | Explain properties and application of Aluminum   | 07 |
|     | (b) | Explain different material and their requirement for high temperature service. Write applications where high temperature service materials are required. | 07 |
|     |     | OR   |    |
| Q.3 | (a) | Compare ferrous and non ferrous metal.   | 07 |
|     | (b) | Write properties and applications of ceramic material.   | 07 |
| Q.4 | (a) | Draw neat sketch of IC diagram and write three important reactions.  | 07 |
|     | (b) | Draw neat sketch of TTT diagram.   | 07 |
|     |     | OR   |    |
| Q.4 | (a) | Explain metallurgical microscope with neat sketch.   | 07 |
|     | (b) | Differentiate micro and macro examination.   | 07 |
| Q.5 | (a) | Draw neat sketch of heat treatment diagram.  | 07 |
|     | (b) | Define the “heat treatment process”, classify it and explain purpose of heat treatment.  | 07 |
|     |     | OR   |    |
| Q.5 | (a) | Explain Material Test Certificate (MTC)  | 07 |
|     | (b) | Write chemical composition, mechanical properties and application of   | 07 |
|     |     | 1. BIS 2062  |    |
|     |     | 2. SA 515 GR 60  |    |
|     |     | 3. SA105   |    |
|     |     | 4. SA386   |    |
|     |     | 5. SA 240 TP 304   |    |
|     |     | 6. SA 240 TP 316   |    |
|     |     | 7. EN 8  |    |

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