| Seat No.: Enrolment No. | Seat No.: | Enrolment No. |
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GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-IV • EXAMINATION - WINTER • 2014

| | | | 2-01-2015 | |
|-----|------------|--|-----------|--|
| • | e: 02 | Name: Metallurgy for Non Metallurgist :30 pm - 05:00 pm Total Marks : | : 70 | |
| | 2. | Attempt all questions. Make suitable assumptions wherever necessary. Figures to the right indicate full marks. | | |
| Q.1 | (a) | Define and explain: | 07 | |
| | (b) | 1. Hardness 2. Creep 3. Ductility Define Non Destructive Testing. Explain the principle of LPT and discuss the limitations. | 07 | |
| Q.2 | (a) | Enlist various Heat treatment processes of copper alloys. Explain age hardening. | 07 | |
| | (b) | What is Stainless steel? Enlist the properties of Stainless steel and classify it. Explain why stainless steels have good corrosion resistance. OR | 07 | |
| | (b) | Mention the detailed classification of steel. Discuss about plain carbon steel. | 07 | |
| Q.3 | (a) | Describe about crystal planes and crystal directions. With neat diagram indicate close packed directions of BCC and FCC materials. | 07 | |
| | (b) | Give the significance of hardenability and explain the method adopted for hardenability measurement. | 07 | |
| Q.3 | (a) | OR Draw and explain Iron–Iron Carbide equilibrium diagram. Label all components properly. | 07 | |
| | (b) | Draw Time - Temperature -Transformation (T T T) diagram for hypereutectoid steel and describe it. | 07 | |
| Q.4 | (a) | Mention the properties and applications of white cast iron. Also compare it with malleable cast iron. | 07 | |
| | (b) | What is rolling? Give applications. Describe about rolling mills. OR | 07 | |
| Q.4 | (a) (b) | Define casting. Explain the Investment casting method. Enlist different metal forming processes. Discuss about Extrusion and Swaging at high temperature. | 07 07 | |
| Q.5 | (a) (b) | Define welding. Explain GMAW welding process. Define corrosion. Enlist types of corrosion. Discuss any one type of corrosion with causes and possible protection methods. OR | 07 07 | |
| Q.5 | (a) | Explain GTAW welding process and compare it with SMAW welding process. | 07 | |
| | (b) | What do you mean by material failure? Write a note on failure due to Fatigue. | 07 | |
