

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

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

**GUJARAT TECHNOLOGICAL UNIVERSITY****B. E. - SEMESTER – VI • EXAMINATION – WINTER 2012****Subject code: 160603****Date: 04/01/2013****Subject Name: Railway, Bridge and Tunnel Engineering****Time: 02.30 pm - 05.00 pm****Total Marks: 70****Instructions:**

1. Attempt any five questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

|            |            |                                                                                                       |                        |
|------------|------------|-------------------------------------------------------------------------------------------------------|------------------------|
| <b>Q.1</b> | <b>(a)</b> | Explain about loading and construction gauge with their uses.                                         | <b>07</b>              |
|            | <b>(b)</b> | (i) Define : UIC-880-TISCO-V-1999-OB<br>(ii) State basic requirements of an ideal alignment.          | <b>03</b><br><b>04</b> |
| <b>Q.2</b> | <b>(a)</b> | Discuss about methods of erection of various types of bridges in brief.                               | <b>07</b>              |
|            | <b>(b)</b> | Explain in brief: (i) Resistance to traction.<br>(ii) Types of stations                               | <b>03</b><br><b>04</b> |
|            |            | <b>OR</b>                                                                                             |                        |
|            | <b>(b)</b> | Explain in brief: (i) Marshalling yards.<br>(ii) Concrete sleepers                                    | <b>03</b><br><b>04</b> |
| <b>Q.3</b> | <b>(a)</b> | Discuss about various types of gradients and grade compensation on curves.                            | <b>07</b>              |
|            | <b>(b)</b> | Discuss about causes and effects of creep. Also write measures to reduce creep.                       | <b>07</b>              |
|            |            | <b>OR</b>                                                                                             |                        |
| <b>Q.3</b> | <b>(a)</b> | Explain in brief with sketch diamond crossing and scissors crossover.                                 | <b>07</b>              |
|            | <b>(b)</b> | What essential purposes are served by signaling and interlocking? Briefly describe semaphore signals. | <b>07</b>              |
| <b>Q.4</b> | <b>(a)</b> | Explain in brief: (i) Strengthening of bridges.<br>(ii) Bridge bearings                               | <b>03</b><br><b>04</b> |
|            | <b>(b)</b> | Explain about ideal bridge site characteristics.                                                      | <b>07</b>              |
|            |            | <b>OR</b>                                                                                             |                        |
| <b>Q.4</b> | <b>(a)</b> | Explain in brief: (i) Scour depth.<br>(ii) Types of bridge superstructure.                            | <b>03</b><br><b>04</b> |
| <b>Q.4</b> | <b>(b)</b> | Explain in brief: (i) Waterway<br>(ii) Types of bridge substructure.                                  | <b>03</b><br><b>04</b> |
| <b>Q.5</b> | <b>(a)</b> | Enlist various methods of tunneling in soft ground. Explain needle beam method.                       | <b>07</b>              |
|            | <b>(b)</b> | Write classification of tunnels. Sketch various shapes of tunnels.                                    | <b>07</b>              |
|            |            | <b>OR</b>                                                                                             |                        |
| <b>Q.5</b> | <b>(a)</b> | Enlist various methods of tunneling in hard rock. Explain any one in detail.                          | <b>07</b>              |
|            | <b>(b)</b> | Explain in brief: (i) Advantages of tunnel.<br>(ii) Lighting and ventilation in tunnel.               | <b>03</b><br><b>04</b> |

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