

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

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

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**BE SEM-VI Examination-Nov/Dec-2011**

**Subject code: 160603**

**Date: 25/11/2011**

**Subject Name: Railway, Bridge and Tunnel Engineering**

**Time: 10.30 am -1.00 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)** Describe in brief the basic requirements of a good alignment. **07**  
**(b)** Explain the conning of wheels with neat sketch **07**

**Q.2 (a)** Compare the characteristics of wooden sleepers and reinforced concrete sleepers used on Indian Railways. **07**  
**(b)** What are the functions of rails? Explain the various types of rails in use. **07**

**OR**

**(b)** What are the effects of creep of rails? **07**

**Q.3 (a)** Define the followings **07**  
(a) Ruling gradient (b) Pusher gradient (c) Momentum gradient  
(d) Compensated gradient for curvature.  
**(b)** Explain briefly the functions of Fish Plate, Screw Spike and Tie bar in a railway track. **07**

**OR**

**Q.3 (a)** Briefly explain semaphore signals and coloured light signals. **07**  
**(b)** What do you understand by loading gauge? How is it different from the construction gauge? **07**

**Q.4 (a)** What is meaning of “Economic span” for a bridge and state how it is determined? **07**  
**(b)** What are the different types of bearings used in bridges? Discuss their relative merits. **07**

**OR**

**Q.4 (a)** Write a short note on Suspension bridge **07**  
**(b)** Enumerate various bridges with movable – span superstructures. **07**

**Q.5 (a)** Explain Needle beam method of tunneling with neat sketch **07**  
**(b)** How are shafts classified? **07**

**OR**

**Q.5 (a)** Write a short note on Heading and bench method of tunneling in rock. **07**  
**(b)** Why is lighting necessary tunnel? Describe various types of tunnel lights. **07**

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