

GUJARAT TECHNOLOGICAL UNIVERSITY**BE SEM-VI Examination May 2011****Subject code: 160603****Subject Name: Railway, Bridge & Tunnel Engineering.****Date: 19/05/2011****Time: 10.30 am – 01.00 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) What do you understand by mountain railways? Describe in brief the various types of alignments used for mountain railways. **07**
- (b) What are the basic functions of marshalling yard and state the points which should be kept in mind when designing a marshalling yard. **07**

- Q.2** (a) Draw a neat sketch of a diamond crossing in railways and list its important features. **07**
- (b) A five degree curve diverges from a main curve of 4 degree in an opposite direction in the layout of a broad gauge yard. If the speed on the main curve is restricted to 54.33 kmph, determine the speed restriction on the branch line. Assume permissible cant deficiency as 7.5 cms. **07**

OR

- (b) Explain resistance due to friction and due to wave action that a locomotive in motion has to overcome. **07**

- Q.3** (a) Define interlocking. Explain essential regulations of interlocking in Indian Railways. **07**
- (b) Explain how the tunnel construction in rock differs from tunneling in soft ground. Describe full face method of tunneling in rock with merits and demerits of it. **07**

OR

- Q.3** (a) Define creep of rail and state the effects of creep. **07**
- (b) State the advantages of tunnels and horse-shoe shape section of tunnels. **07**

- Q.4** (a) What are the requirements of a ventilating system? Explain briefly various methods for dust suppression during tunneling. **07**
- (b) State the classification of bridges based on different factors. **07**

OR

- Q.4** (a) With neat sketch, explain the sequence of operation of driving tunnels in soft ground using liner plates without stiffeners. **07**
- (b) Define economic span, linear waterway and afflux. Also state the guiding principle which must be kept in mind to ensure the safety of the structure while fixing the waterway of bridge. **07**

- Q.5** (a) State the functions of bearings and also explain rocker and roller bearings. **07**
- (b) Discuss step by step method of erection of a single span suspension bridge of about 80 m span in a hilly area to carry light weight traffic. **07**

OR

- Q.5** (a) Explain the methods of strengthening a bridge superstructure **07**
- (b) Explain, with neat sketches bascule bridges and state their advantages specially over the swing bridge. **07**
