

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-VI • EXAMINATION – SUMMER • 2014

Subject Code: 160603**Date: 23-05-2014****Subject Name: Railway Bridge and Tunnel Engineering****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) Explain the role of railways in development of India. What are the requirements of an ideal permanent way? **07**
- (b) What are the factors affecting for selection of type of bridge? Draw the detailed plan, elevation and section of high level R.C.C. girder bridge. **07**
- Q.2** (a) Draw the sketches of different types of rail sections and discuss their merits and demerits. **07**
- (b) Describe with sketch the procedure to transfer the centre line inside the tunnel. **07**
- OR**
- (b) Why the uniformity of gauges is desirable in any country? Explain with sketch 'Loading Gauge'. **07**
- Q.3** (a) Briefly explain: Momentum gradient, Grade compensation, Cant deficiency. **07**
- (b) Compute an equilibrium cant on a B.G. track of 3° horizontal curve for a speed of 60 kmph, and also determine the maximum permissible speed after allowing the maximum cant deficiency. **07**
- OR**
- Q.3** (a) What are the functions of providing sleepers in railway? Give detail comparison of CI sleepers with Concrete sleepers. **07**
- (b) From a layout of B.G. yard, 7° curve branches off from a 3° main curve in an opposite direction. If speed is restricted to 28 kmph on branch line and permissible cant deficiency is 7.61cm. Determine the speed restriction on main line. **07**
- Q.4** (a) Explain with sketches: Junction fish plate, Dog spikes, C.I. Chair with spring keys. **07**
- (b) Draw sketches of: (i) Suspension bridge and (ii) Bow string arch bridge. Also, discuss the load transmission from superstructure to sub structure in these bridges. **07**
- OR**
- Q.4** (a) What are the functions of points & crossings in railway track layout? Draw a neat diagram of Diamond Crossing and show its various component parts. **07**
- (b) Briefly explain for the bridges: Scour depth, Economic span, Cut water and Ease water. **07**
- Q.5** (a) Under which situations tunnels are preferred? Explain with sketch any one method of tunneling in soft ground. **07**
- (b) What are the functions of bridge bearings? Explain with sketches: Rocker bearing, Roller bearing. **07**
- OR**
- Q.5** (a) Give a brief note on: (i) Safety precautions in tunneling, (ii) Tunnel ventilation. **07**
- (b) Discuss with sketches the river training works required for bridges. **07**
