Seat No.: _____ Enrolment No._____

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 3^0 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, 7^0 curve branches off from a 3^0 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**

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