Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI (NEW) EXAMINATION – WINTER 2017

Subject Code: 2160603 Date:13/11/2017

Subject Name:Railway, Bridge & Tunnel Engineering

Time:02:30 PM TO 05:00PM Total Marks: 70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
1. **Figures to the right indicate full marks.**

Q.1*	**(a)**	Draw the typical cross section of permanentway on embankment showing– Gauge, Rail, Ballast, sleeper, Formation width	**03**
	(b)	Explain stepwise procedure for construction of new railway line	**04**
	(c)	Draw sketch of bridge- elevation and side view, show all the component parts like sub structure, super structure, pier, abutment,bearings, wing wall, weep holes, expansion joint, girder, parapet.	**07**
Q.2	**(a)**	Draw sketch of pandrol clip and fish plate Suggest need of both.	**03**
	(b)	Suggest the function and location of warner, home and starter signal	**04**
	(c)	Why maintenance is necessary in railway line ? Enlist the essentials of track maintenance.	**07**
		OR	
	(c)	Enlist the varous methods of erection of steel girder bridge and explain stepwise procedure of any one by drawing sketch.	**07**
Q.3	**(a)**	Draw the cross section of flat footed rail Suggest length of one BG rail and its weight per meter	**03**
	(b)	Explain conning of wheels by drawing neat and clean sketch	**04**
	(c)	A BG branch line track takes off as a contrary flexure through a 3˚ curve from 5˚ curve of main line. Due to turnout max. permissible speed on Main Line is 60 km/hr. Calculate Speed restriction on branch line, Assume permissible cant deficiency as 7.6 cm.	**07**
		OR	
Q.3	**(a)**	Differentiate between junction, terminal and yard	**03**
	(b)	What is grade compensation ? why it is necessary in railway track	**04**
	(c)	Enlist each defects in bridge and its corresponding remedial measures to be required by bridge engineer	**07**
Q.4	**(a)**	Enlist the salient features of metro rail	**03**
	(b)	Explain the function of bearing in bridge, draw sketch of any one type of bearing and clearly show the place where it is provided in bridge.	**04**
	(c)	As a safety engineer suggest the safety measures is necessary while tunnel construction is going on.	**07**
		OR	

Q.4	**(a)**	Enlist different types of gradients used in railway track? What is helper gradient ?	**03**
	(b)	As an Executive engineer of R and B you have to select the site for bridge, enlist the factors which you keep in mind.	**04**
	(c)	Enlist the various methods of tunneling in hard rock, explain step wise procedure of any one by drawing sketch	**07**
Q.5	**(a)**	What is the different beween block station and non block station	**03**
	(b)	Explain the need of tunnel and its disadvantage	**04**
	(c)	Compare steel sleeper and prestressed sleeper suggest which is best	**07**

OR

Q.5	**(a)**	Enlist the function of ballast, What is boxing?	**03**
	(b)	Explain the significance of shaft and portals in tunnel	**04**
	(c)	Draw the sketch of turout, show all the component parts- points, crossing, stock rail, check rail, wing rail, ANC,TNC, lead rail.	**07**

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