

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-VI (NEW) EXAMINATION – WINTER 2018
Subject Code:2160603
Date:27/11/2018
Subject Name:Railway, Bridge & Tunnel Engineering
Time: 02:30 PM TO 05:00 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) Enlist the different gauges used in India. **03**
 (b) Write short note on Mono rails. **04**
 (c) What are the functions of rails? Explain the various types of rails in use. **07**

- Q.2** (a) Define the following: **03**
 i) Ruling gradient ii) Pusher gradient iii) Momentum gradient
 (b) Discuss factors affecting site selection of bridge. **04**
 (c) Explain 'negative super elevation'. State the circumstances under which it is provided. **07**

OR

- (c) 5° curve diverges from a main curve of 4° 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 cm. **07**

- Q.3** (a) Explain resistance due to friction that locomotive in motion has to overcome. **03**
 (b) Explain Track Drainage. **04**
 (c) Draw the neat sketch of simple left hand turnout and show its various component parts. Explain the working principle of the turnout. **07**

OR

- Q.3** (a) Give the purpose of railway station. **03**
 (b) Explain causes of rail accidents and their remedial measures in brief. **04**
 (c) What are the facility requirements of railway station? **07**

- Q.4** (a) Write types and function of bearing. **03**
 (b) Discuss stages involved in bridge investigation. **04**
 (c) What is 'economic span' of a bridge? Derive the expression for economic span of bridge. **07**

OR

- Q.4** (a) Give classification of bridge based on super structure. **03**
 (b) Explain various defects in bridge. **04**
 (c) Write Short note on "maintenance of bridges". **07**

- Q.5** (a) Define the terms: **03**
 i) Water way ii) Afflux iii) Free board
 (b) Discuss the drainage system in tunnel construction. **04**
 (c) Discuss any one method of tunneling in hard rock. **07**

OR

- Q.5** (a) Write a short note on Scour depth. **03**
 (b) Write safety precautions in tunnel construction. **04**
 (c) Explain various methods of tunnel ventilation. **07**

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