Seat No.: _____ Enrolment No._____



# GUJARAT TECHNOLOGICAL UNIVERSITY

**BE - SEMESTER–VI(NEW) – EXAMINATION – SUMMER 2019**

**Subject Code:2160603 Date:16/05/2019**

**Subject Name:Railway, Bridge & Tunnel Engineering**

**Time:10:30 AM TO 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.**

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|---|---|---|---|
| **Q.1** | **(a)** | Enlist the component parts of a permanent way. | **03** |
| | **(b)** | Explain the conning of wheels with neat sketch. | **04** |
| | **(c)** | Discuss the systems of Railways in brief. | **07** |
| **Q.2** | **(a)** | Draw a sketch of turnout and explain its components. | **03** |
| | **(b)** | Describe the various measures to be taken for preventing railway accidents. | **04** |
| | **(c)** | Define cant deficiency. What would be the permissible speed on the curve? If on a 8 degree M.G. track, the average speed of different trains is 50 kmph and allowable cant deficiency is half that of maximum cant deficiency. | **07** |
| | | **OR** | |
| | **(c)** | Define super-elevation. A 5 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 56 kmph, determine the speed restriction on the branch line. Assume permissible cant deficiency as 7.5 cm. | **07** |
| **Q.3** | **(a)** | Draw sketch of pandrol clip and fish plate. Suggest need of both. | **03** |
| | **(b)** | Discuss specification of Track ballast. | **04** |
| | **(c)** | Define the creep of rail & state the effects of creep. | **07** |
| | | **OR** | |
| **Q.3** | **(a)** | Find out the expression for sleeper density for a B.G. Track if 19 sleepers are used under a rail length. | **03** |
| | **(b)** | Write a short note on 'Diamond Interchange' with the sketch. | **04** |
| | **(c)** | What do you understand by mountain railways? Describe in brief the various types of alignments used for mountain railways. | **07** |
| **Q.4** | **(a)** | Enlist the factors which you keep in mind during the selection of an appropriate site for the bridge as an engineer. | **03** |
| | **(b)** | Discuss components of bridges with neat sketch. | **04** |
| | **(c)** | Write types and function of bearing. Explain rocker and roller bearing. | **07** |
| | | **OR** | |
| **Q.4** | **(a)** | Write a short note on Economic Span of the bridge. | **03** |
| | **(b)** | Write a short note on Suspension bridge. | **04** |
| | **(c)** | What are the objectives of signaling and interlocking in railway? Discuss with sketches of different types of signals used in railway. | **07** |
| **Q.5** | **(a)** | Give advantages of the shaft. | **03** |
| | **(b)** | Write safety precautions in tunnel construction. | **04** |
| | **(c)** | Under which circumstances do you prefer Tunneling? Classify the tunnels according to their shape and size. Explain with sketch any two of them. | **07** |
| | | **OR** | |
| **Q.5** | **(a)** | Draw sketch of different shapes of the tunnel. | **03** |
| | **(b)** | Explain cut water & ease water. | **04** |
| | **(c)** | Explain various methods of tunnel ventilation. | **07** |

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