

GUJARAT TECHNOLOGICAL UNIVERSITY
BE- SEMESTER-VI (NEW) EXAMINATION – WINTER 2020**Subject Code:2160603****Date:27/01/2021****Subject Name:Railway, Bridge & Tunnel Engineering****Time:02:00 PM TO 04:00 PM****Total Marks: 56****Instructions:**

1. Attempt any **FOUR** questions out of **EIGHT** questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Discuss about development of Indian railway. **03**
(b) Explain the various defects in Bridges. **04**
(c) Explain the basic requirements of an ideal alignment. **07**
- Q.2** (a) Define : (i) Negative super elevation (ii) Creep of rail (iii) Sleepers **03**
(b) Explain the coning of wheels with neat sketch. **04**
(c) What is Ballast? Write Function and requirement of good ballast. **07**
- Q.3** (a) Draw a sketch of turnout and explain its components. **03**
(b) Using a sleeper density of $n+5$, find out the number of sleeper required for constructing a railway track 900 meters long (B.G. track). **04**
(c) Write short note on “ Bridge architecture”. **07**
- Q.4** (a) Which facilities are required at railway station? **03**
(b) Draw a sketch of diamond crossing in railways and list the important features. **04**
(c) State the purposes of bearings in a bridge and explain rocker and roller bearings with sketch. **07**
- Q.5** (a) Define : (i) Economic span (ii) Afflux (iii) Free board **03**
(b) Explain Track Drainage. **04**
(c) Write method of erection of steel girder bridges. **07**
- Q.6** (a) Define : (i) Scour depth (ii) Linear waterway (iii) HFL **03**
(b) List the different types of spikes with sketch and their uses also. **04**
(c) Explain the river training works for bridges. **07**
- Q.7** (a) Define shaft and give advantages of shaft. **03**
(b) List the methods of tunnelling in hard rock and explain any one. **04**
(c) Why drainage is necessary in tunnel? Discuss various drainage systems for tunnel. **07**
- Q.8** (a) Write short notes on “Dust control in tunnel”. **03**
(b) List the methods of tunnelling in soft ground and explain any one. **04**
(c) Explain various methods of tunnel ventilation. **07**
