

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI (NEW) EXAMINATION – SUMMER 2023****Subject Code:2160603****Date:10-07-2023****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.
4. Simple and non-programmable scientific calculators are allowed.

- Q.1** (a) State advantages and disadvantages of tunneling. **03**
(b) Which are the factors affecting for site selection of a bridge? **04**
(c) Write short note on importance of railways. **07**

- Q.2** (a) Draw various shapes of tunnels with details. **03**
(b) Draw a neat sketch of a bridge showing all components. **04**
(c) What would be equilibrium cant on M.G. track of 4° curve for a speed of 80 kmph? What would be the maximum permissible speed after allowing the maximum cant deficiency? **07**

OR

- (c) The ruling gradient has been fixed as 1 in 200 on a section of B.G. track. What should be the compensated gradient when a 4° horizontal curve is also to be introduced on this ruling gradient? **07**

- Q.3** (a) Which are the causes of accidents in tunnel? **03**
(b) Explain coning of wheels with neat sketch. **04**
(c) Classify the bridges according to type of superstructure and explain suspension bridge with figure. **07**

OR

- Q.3** (a) List out the factors affecting for deterioration of bridge components. **03**
(b) Explain factors affecting selection of railway gauge. **04**
(c) Draw a cross section of railway track showing all components. **07**

- Q.4** (a) Explain methods adopted to assess the safe carrying capacity of bridges. **03**
(b) What are the function of fish plate, screw spike, rag bolt and tie bar in railway track? **04**
(c) Discuss functions of rails, sleepers and ballast. **07**

OR

- Q.4** (a) Describe spring crossing with figure. **03**
(b) Write short note on dust control in tunnel. **04**
(c) Define: Afflux, Free board, Scouring, Scour depth, Clear span, Economic span and Linear water way. **07**

- Q.5** (a) Define: Way side station, Junction station and Terminal station. **03**
(b) Explain rocker type bearing and rocker-roller bearing with figure. **04**
(c) What do you mean by signaling and interlocking in railways? Explain semaphore signals with neat sketch. **07**

OR

Q.5	(a)	Discuss about periodical maintenance of railway track.	03
	(b)	Enlist various forces acting on different parts of bridges.	04
	(c)	Prepare a list of methods of tunneling in soft ground. Explain needle beam method with its advantages and disadvantages.	07
