

Enrollment No./Seat No.:

## GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering - SEMESTER - VII EXAMINATION - WINTER 2025

Subject Code: 3170619

Date: 01-12-2025

Subject Name: Railway and Airport 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.

	Marks
<b>Q.1</b> (a) Define gauge of railway track. Enumerate different gauges used in India.	<b>03</b>
(b) Define Permanent way and Draw a neat sketch showing its main components with functions.	<b>04</b>
(c) Describe in brief the basic requirements of an ideal Permanent way.	<b>07</b>
<b>Q.2</b> (a) Define Gradients. List purposes to provide Gradients.	<b>03</b>
(b) Derive an expression for superelevation in railway track design.	<b>04</b>
(c) Explain in detail the types of rail joints with sketch.	<b>07</b>

### OR

(c) A $5^\circ$ curve diverges from a $3^\circ$ main curve in reverse direction in the layout of a B.G. yard. If the speed on the branch line is restricted to 35 kmph. Determine the restricted speed on the mainline.	<b>07</b>
<b>Q.3</b> (a) Enlist the necessity of geometric design of a railway track.	<b>03</b>
(b) Give types of yards. Discuss marshalling yard in detail	<b>04</b>
(c) Explain components or parts of Aeroplane with neat sketch.	<b>07</b>

### OR

(a) Classify the airport as per ICAO.	<b>03</b>
(b) Define Crossing. Enlist types of crossing and explain any one in brief.	<b>04</b>
(c) Find out the length of the curve for a B.G. curve track having $4^\circ$ and a cant of 12cm. The maximum permissible speed on curve is 85 kmph.	<b>07</b>
<b>Q.4</b> (a) Define any three: approach zone, turning zone, airport capacity, runway capacity	<b>03</b>
(b) Describe the airport terminal building with help of the sketch.	<b>04</b>
(c) Elaborate various factors to be considered while selecting suitable site for an airport.	<b>07</b>

### OR

- (a) Enlist fittings and fastenings commonly used for joining rails. Explain any one briefly. **03**

- (b) Explain factors that affect the necessary size of an airport. **04**
- (c) Define the term visual aid at airport. List the necessity of visual aids and explain the different visual aids. **07**
- Q.5** (a) Explain Runway Orientation **03**
- (b) Classify and briefly explain types of railway switch. **04**
- (c) Write a brief note on airport markings and lighting. **07**

**OR**

- (a) Give classification of various types of sleepers. **03**
- (b) Outline the functions of taxiway in airports. Draw cross sections of taxiway showing all components. **04**
- (c) Explain the role of Indian Railways in the social and economic development of the country. Briefly mention the strengths and weaknesses of the Indian Railways. **07**

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