Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–VI EXAMINATION – WINTER 2025

Subject Code:3150611 Date:02-12-2025

Subject Name: Transportation 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
Q.1	**(a)**	Draw the typical cross-section of a highway showing all the components of it.	**03**
	(b)	Compare the roadway and railway transportation.	**04**
	(c)	What are the various tests to be carried out on Bitumen? Explain Ductility Test.	**07**
Q.2	**(a)**	Explain in brief: DGCA	**03**
	(b)	Explain PIEV theory.	**04**
	(c)	Derive an expression for calculating the stopping sight distance on a roadway.	**07**
		OR	
	(c)	Describe various factors controlling the highway alignment.	**07**
Q.3	**(a)**	Write the objectives of highway maintenance works.	**03**
	(b)	Explain construction steps for WBM.	**04**
	(c)	Explain various types of failures in Cement concrete pavements in details.	**07**
		OR	
Q.3	**(a)**	Write Short note on: Street Lighting.	**03**
	(b)	Distinguish between flexible pavement and rigid pavement.	**04**
	(c)	Explain various methods of On-street Parking.	**07**
Q.4	**(a)**	Give functions of points and crossings	**03**
	(b)	Explain the 'coning of wheels' with neat sketch.	**04**
	(c)	Write a note on "Junction and terminal"	**07**
		OR	
Q.4	**(a)**	Define: Railway gauge with a sketch and enlist various gauges prevalent on Indian Railways.	**03**
	(b)	Enlist different types of traffic surveys. What is the significance of Delay studies?	**04**
	(c)	Write in detail the reason of failure and suggestion for improvement of following distresses in pavement (i) Potholes, (ii) Elegator cracking.	**07**
Q.5	**(a)**	Explain the wind rose diagram concept for runway orientation.	**03**
	(b)	Explain the terms: (1) Jetty (2) Dolphin (3) Dredging (4) Wharf	**04**
	(c)	Describe main components of terminal building with sketch and what facilities are provided in the terminal building.	**07**
		OR	
Q.5	**(a)**	Explain various factors determining selection of Breakwater.	**03**
	(b)	Distinguish between harbor and Port.	**04**
	(c)	Write short note on Site selection for an airport.	**07**

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Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–V (NEW) EXAMINATION – WINTER 2024

Subject Code:3150611 Date:17-12-2024

Subject Name:Transportation 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
Q.1	**(a)**	Discuss various modes of transportation	**03**
	(b)	Write a short note on IRC	**04**
	(c)	Derive an expression for calculating overtaking sight distance distance. roadway.	**07**
Q.2	**(a)**	Explain flash and fire test.	**03**
	(b)	Write a short note on Directorate General of Civil Aviation	**04**
	(c)	Explain the factors controlling the alignment of roads	**07**
		OR	
	(c)	Calculate the stopping sight distance for a design speed of 120 KMPH with ascending and descending gradient 1 in 35. Assume reaction time as 2.5 sec, coefficient of friction as 0.35	**07**
Q.3	**(a)**	What is camber? Sketch the types of camber.	**03**
	(b)	Explain PIEV theory.	**04**
	(c)	Calculate extra widening required for a pavement having width of 7.5 meter on a horizontal curve of radius 250 m if longest wheel base of expected vehicle is 7.5 m. Consider design speed as 80 KMPH	**07**
		OR	
Q.3	**(a)**	Differentiate between bitumen and tar	**03**
	(b)	Distinguish between flexible pavement and rigid pavement	**04**
	(c)	Explain various typical failures in rigid pavement with the help of neat sketches.	**07**
Q.4	**(a)**	Define (i) Journey Speed (ii) Super elevation (iii) spot speed	**03**
	(b)	Write short note on ESWL.	**04**
	(c)	Discuss safety measures to avoid accidents.	**07**
		OR	
Q.4	**(a)**	What are the importance of highway drainage?	**03**
	(b)	Explain conning of wheels	**04**
	(c)	Describe types of parking	**07**
Q.5	**(a)**	Write a short note on types of rail section	**03**
	(b)	Differentiate between Dry dock and Wet dock	**04**
	(c)	Explain the functions of points and crossings with sketch.	**07**
		OR	
Q.5	**(a)**	Enlist the different components of airport and show it in a sketch.	**03**

(b) Distinguish between harbor and Port. **04**

(c) What are the factors affecting runway orientation? Briefly explain wind rose diagram. **07**

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Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V (NEW) EXAMINATION – WINTER 2023

Subject Code:3150611 Date:20-12-2023

Subject Name: Transportation 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
Q.1	**(a)**	What are the recommendations of Jaykar committee? Explain which recommendations are accepted by government.	**03**
	(b)	Distinguish between superelevation and camber in cross section in highway.	**04**
	(c)	Explain how the length of summit curve is designed.	**07**
Q.2	**(a)**	Discuss the various factors which are affecting a flexible pavement design.	**03**
	(b)	Discuss various joints provided in cement concrete road, with the object of providing each joint.	**04**
	(c)	Explain aggregate impact test with IRC guidelines.	**07**
		OR	
	(c)	Explain flash and fire point test on bitumen.	**07**
Q.3	**(a)**	Write a note on passenger car unit.	**03**
	(b)	Explain O & D survey in detail.	**04**
	(c)	Define gauge of railway track. Enumerate different gauges used in India.	**07**
		OR	
Q.3	**(a)**	Define traffic density and traffic volume	**03**
	(b)	Write causes of accident. Also explain the condition and collision diagram.	**04**
	(c)	Write a note on uniformity of Gauges.	**07**
Q.4	**(a)**	Give the functions of railway sleepers.	**03**
	(b)	Distinguish between port and harbour.	**04**
	(c)	Write a note on classification of harbour.	**07**
		OR	
Q.4	**(a)**	State the requirements of a good ballast materials.	**03**
	(b)	Explain different types of buoys.	**04**
	(c)	Write a note on break water.	**07**
Q.5	**(a)**	Explain three controls of aircraft.	**03**
	(b)	Compare holding apron with loading and unloading aprons.	**04**
	(c)	Discuss the airport master planning process in detail.	**07**
		OR	
Q.5	**(a)**	Compare runway with taxiway.	**03**
	(b)	Give the classification of airport as per ICAO.	**04**
	(c)	What is terminal building? What are the facilities provided in the terminal building?	**07**

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Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V (NEW) EXAMINATION – WINTER 2022

Subject Code:3150611 Date:09-01-2023

Subject Name:Transportation 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)**	Draw the typical cross-section of a highway showing all the components of it.	**03**
	(b)	Write a short note on: PMGSY	**04**
	(c)	Describe airport master planning process as per ICAO Recommendations.	**07**
Q.2	**(a)**	Explain in brief: IRC	**03**
	(b)	Distinguish between Flexible pavement and Rigid pavement.	**04**
	(c)	Describe various engineering surveys to be carried out for location of highway alignment.	**07**
		OR	
	(c)	Define sight distance. Derive an expression for calculating the overtaking sight distance on a highway.	**07**
Q.3	**(a)**	Explain rectangular road pattern with advantages of it.	**03**
	(b)	Explain various factors affecting sub grade soil strength.	**04**
	(c)	Discuss desirable properties of bitumen. Explain ductility test of bitumen.	**07**
		OR	
Q.3	**(a)**	Write the advantages of uniformity of gauge throughout the nation.	**03**
	(b)	Write short note on ESWL.	**04**
	(c)	Explain plate load test with its limitations.	**07**
Q.4	**(a)**	Define the terms: a. Traffic rotary b. Collision Diagram c. Cloverleaf interchange	**03**
	(b)	Explain various types of failures in Cement concrete pavements in details.	**04**
	(c)	Explain aggregate impact test with IRC limits.	**07**
		OR	
Q.4	**(a)**	Define the terms: a. PCU b. O-D Study c. arboriculture	**03**
	(b)	Explain the 'coning of wheels' with neat sketch.	**04**
	(c)	Explain steps for flexible pavement design as per IRC guidelines.	**07**
Q.5	**(a)**	Give functions of points and crossings.	**03**
	(b)	Explain the following terms: a. Moles b. Wharf c. Jetty d. Light house	**04**
	(c)	Explain the various design factors in road lighting.	**07**
		OR	
Q.5	**(a)**	Explain the wind rose diagram concept for runway orientation.	**03**
	(b)	Explain the following terms: a. Taxiway b. Propeller c. Rudder d. ILS	**04**
	(c)	Draw the schematic diagram of harbour layout showing all components.	**07**

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