Seat No./Enrollment No.: _____

GUJARAT TECHNOLOGICAL UNIVERSITY
BACHELOR OF ENGINEERING – SEMESTER 5 – EXAMINATION – SUMMER 2026

Subject Code: 3150611 **Date: 06/06/2026**

Subject Name: Transportation Engineering

Time: 02:30 PM TO 05:00 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)**	Give merits and demerits of railway trasportation.	**03**
	(b)	Write short note on: Airport Authority of India.	**04**
	(c)	Draw a cross section of road structure showing its components and functions of each.	**07**
Q.2	**(a)**	Explain the term : (i) Skid (ii) Slip	**03**
	(b)	Explain flakiness and elongation index of aggregates.	**04**
	(c)	What are the various tests carried out on bitumen? Explain ductility test.	**07**
		OR	
Q.2	**(c)**	Discuss the desirable properties of bitumen. Explain the penetration test and its use.	**07**
Q.3	**(a)**	What are the advantages of bituminous roads?	**03**
	(b)	Distinguish between flexible pavement and rigid pavement.	**04**
	(c)	Write short note on: Equivalent Single Wheel Load.	**07**
		OR	
Q.3	**(a)**	Explain construction steps for WBM.	**03**
	(b)	What is routine maintenance of highway? State the item included under it.	**04**
	(c)	Explain with sketches the functioning of joints filler and sealer. Discuss the desirable properties of these materials.	**07**
Q.4	**(a)**	What are the objects of road side arboriculture? What are its disadvantages?	**03**
	(b)	What are the purpose of parking studies? Explain various parking studies.	**04**
	(c)	Discuss briefly the different causes of traffic accidents. Also explain the collision diagram and condition diagram.	**07**
		OR	
Q.4	**(a)**	Give the requirements of an ideal permanenet way.	**03**
	(b)	Explain 'Coning of wheel s' with neat sketch.	**04**
	(c)	Draw a neat sketch of simple left hand turnout and show its various components.	**07**
Q.5	**(a)**	Write short note on: Marshalling yard.	**03**
	(b)	Describe aircraft component parts drawing sketch.	**04**
	(c)	List various types of sleeper used on Indian railway. Which one would you consider to be best for morden track?	**07**

OR

Q.5 **(a)** What is wind rose diagram? What are its uses? **03**

(b) What is terminal building? What are the facilities provided in the terminal building? **04**

(c) Enlist different type of breakwater and describe wall type breakwater. **07**

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Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V EXAMINATION – SUMMER 2025

Subject Code:3150611 Date:28-05-2025

Subject Name:Transportation Engineering

Time:02:30 PM TO 05:00 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)**	Enlist the functions of IRC.	**03**
	(b)	Classify urban roads.	**04**
	(c)	Enlist and explain advantages and disadvantages of each modes of transportation.	**07**
Q.2	**(a)**	Explain importance of super elevation in highway geometry design.	**03**
	(b)	Explain in brief 1. OSD 2. SSD	**04**
	(c)	Explain soil stabilization in pavement construction.	**07**
		OR	
	(c)	Draw the sketch of flexible pavement and rigid pavement with description of components.	**07**
Q.3	**(a)**	Enlist different tests on bitumen.	**03**
	(b)	Define – Running Speed, Journey Speed	**04**
	(c)	Explain determination of penetration value of bitumen.	**07**
		OR	
Q.3	**(a)**	Enlist different tests on aggregates.	**03**
	(b)	Give the classification of highway maintenance work.	**04**
	(c)	Explain aggregate impact test.	**07**
Q.4	**(a)**	Enlist Methods of O and D Survey.	**03**
	(b)	Explain Role of Indian Railways in National Development.	**04**
	(c)	Explain different road user characteristics in traffic engineering.	**07**
		OR	
Q.4	**(a)**	Significance of Coning of wheel in Railway.	**03**
	(b)	Explain types of on street parking in brief.	**04**
	(c)	Explain various measures for the reduction in accident at curvature on highway.	**07**
Q.5	**(a)**	Define 1. Taxiway. 2. Apron.	**03**
	(b)	Enlist Aircraft Component parts with sketch.	**04**
	(c)	Explain the classification of Airport in detail.	**07**
		OR	
Q.5	**(a)**	Define 1. Harbor 2. Port	**03**
	(b)	Explain Jetty and Breakwater.	**04**
	(c)	Explain the classification of harbor in detail.	**07**

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Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject Code: 3150611 Date:31-05-2024

Subject Name: Transportation Engineering

Time:02:30 PM TO 05:00 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)**	Explain in brief about IRC	**03**
	(b)	Enlist advantages and disadvantages of Rail transport with respect to Road transport.	**04**
	(c)	Discuss Role of Transportation for National Development In detail.	**07**
Q.2	**(a)**	Draw the typical cross-section of a highway showing all the components of it.	**03**
	(b)	Enlist Factors controlling road alignment and explain any one.	**04**
	(c)	Discuss Classification of Roads in detail.	**07**
		OR	
	(c)	Discuss Stopping Sight Distance in detail with sketch.	**07**
Q.3	**(a)**	Enlist Different test conducted on aggregates.	**03**
	(b)	Explain Necessity of soil stabilization.	**04**
	(c)	The speed of overtaking and the overtaken vehicle is 80kmph and 65 kmph respectively on two-way traffic. The acceleration of the overtaking vehicle is 3.6 kmph. Calculate Safe overtaking sight distance. Assume reaction time of a driver 2 sec	**07**
		OR	
Q.3	**(a)**	Enlist Different test conducted on bitumen.	**03**
	(b)	Enlist Functions of modified bituminous binders.	**04**
	(c)	Discuss in detail Marshal Mix Design.	**07**
Q.4	**(a)**	Enlist different types of Joints in Rigid Pavements, Explain any one.	**03**
	(b)	Distinguish between flexible pavement and rigid pavement.	**04**
	(c)	Discuss various types of Parking in details. (Types, sketch, advantages and disadvantages)	**07**
		OR	
Q.4	**(a)**	Draw neat sketch showing of Cross-sectional Elements of Rail-Road	**03**
	(b)	Explain purpose of providing Points and crossings in rail.	**04**
	(c)	Explain Coning of wheel and Super-elevation for Railway.	**07**
Q.5	**(a)**	Define 1. Harbor 2. Port	**03**
	(b)	Explain classification of Harbor.	**04**
	(c)	Discuss in detail about navigational aids.	**07**
		OR	
Q.5	**(a)**	Define 1. Runway 2. Taxiway	**03**
	(b)	Explain classification of Airport.	**04**
	(c)	Enlist different components of an aircraft and draw neat sketch of Aircraft showing different components.	**07**

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Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE – SEMESTER- V EXAMINATION-SUMMER 2023

Subject Code: 3150611 Date: 03/07/2023

Subject Name: Transportation Engineering

Time: 02:30 PM TO 05:00 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)**	Differentiate between Nagpur and Bombay Road development plan.	**03**
	(b)	Write the importance of different modes in context to socio-economic development.	**04**
	(c)	Write a short note on ICAO and CRRI.	**07**
Q.2	**(a)**	Briefly explain classification of urban roads.	**03**
	(b)	Differentiate between Flexible and Rigid Pavement.	**04**
	(c)	Explain PIEV theory in detail.	**07**
		OR	
	(c)	Write in detail the reason of failure and suggestion for improvement of following distresses in pavement (i) Potholes, (ii) Elegator cracking.	**07**
Q.3	**(a)**	Explain function and classification of modified bituminous binder.	**03**
	(b)	Derive an expression for calculating the stopping sight distance on a roadway.	**04**
	(c)	Write a shote note on Marshall Mix Design method.	**07**
		OR	
Q.3	**(a)**	Enlist different tests for bitumen and explain softening test briefly.	**03**
	(b)	Write a short note on Coning of wheel in railway engineering.	**04**
	(c)	Derive an equation to calculate super elevation on horizontal circular curve.	**07**
Q.4	**(a)**	Draw the diagram of the “Points & Crossing” showing all components of it in detail.	**03**
	(b)	Describe Construction procedure of Granular Base Course-WBM	**04**
	(c)	Briefly explain the various types of joints used in the construction of cement concrete pavement.	**07**
		OR	
Q.4	**(a)**	Write a note on Junction and Terminal.	**03**
	(b)	Enlist types of parking. Explain various methods of on street parking.	**04**
	(c)	State the concept of PCU value and the factors affecting PCU values.	**07**
Q.5	**(a)**	What is the importance of wind rose diagram in runway orientation?	**03**
	(b)	Enlist different types of traffic surveys. What is the significance of Delay studies?	**04**
	(c)	What are the different points to be taken care while selecting the site for airport?	**07**
		OR	
Q.5	**(a)**	Enlist the different components of Airport. Explain the importance of Taxiway.	**03**
	(b)	Write a short note on marking and lighting on runway.	**04**
	(c)	Explain Points & Crossing with neat sketch.	**07**

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Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject Code:3150611 Date:07/06/2022

Subject Name:Transportation Engineering

Time:02:30 PM TO 05:00 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)**	Write a short note on ICAO.	**03**
	(b)	Compare the roadway and railway transportation.	**04**
	(c)	What are the various tests carried out on Bitumen? Explain Ductility Test.	**07**
Q.2	**(a)**	Explain the conning of wheel with neat sketch.	**03**
	(b)	Explain PIEV theory.	**04**
	(c)	Derive an expression for calculating overtaking sight distance on a Highway.	**07**
		OR	
	(c)	Derive an expression for finding stopping sight distance at level and at grades.	**07**
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**
		OR	
Q.3	**(a)**	Write the objective of highway maintenance works.	**03**
	(b)	Explain construction step for WBM.	**04**
	(c)	Describe the plate load test in detail. What is the limitation of plate load test?	**07**
Q.4	**(a)**	Define Creep in rail. Write the theory behind it.	**03**
	(b)	Explain importance of Highway Drainage.	**04**
	(c)	A 5º curve diverges from a main curve of 4º in an opposite direction in the layout of a broad gauge yard. If the speed on the main curve is restricted to 54.33 kmph, determine the speed restriction on the branch line. Assume permissible cant deficiency as 7.5 cm.	**07**
		OR	
Q.4	**(a)**	Draw the diagram of the “Points & Crossing” showing all components of it in detail.	**03**
	(b)	Describe the maintenance of bituminous roads.	**04**
	(c)	Write a note on “Junction and terminal”.	**07**
Q.5	**(a)**	Explain various factors determining selection of Breakwater.	**03**
	(b)	Distinguish between harbor and Port.	**04**
	(c)	Describe main components of terminal building with sketch and what facilities are provided in the terminal building.	**07**

OR

Q.5	**(a)**	Enlist the different components of Airport. Explain the importance of Taxiway.	**03**
	(b)	What is runway orientation? What are the factors affecting runway orientation?	**04**
	(c)	What is the purpose of navigational aids? Explain any one aid.	**07**