GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI EXAMINATION – SUMMER 2025

Subject Code: 3160615   **Date:30-05-2025**

Subject Name: Traffic Engineering and Management

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)**	Define terms: PCU (2) Space mean speed (3) Traffic flow	03
	(b)	What is scope of traffic engineering?	04
	(c)	Discuss various automatic counters used for traffic volume count.	07
Q.2	**(a)**	Define terms: Traffic island (2) Traffic intersection (3) Traffic signal	03
	(b)	Explain psychological factors of road users.	04
	(c)	What are purposes of travel time and delay studies? Also explain briefly various methods are adopted for travel time and delay studies.	07
		OR	
	(c)	Describe shock wave theory can be applied in solving bottleneck Problems.	07
Q.3	**(a)**	Why traffic forecasting is necessary? Explain.	03
	(b)	Write a short note on 'Enoscope'.	04
	(c)	Explain objective and principles of fixed time signals. Also discuss Webster's method for design of fixed time signals.	07
		OR	
Q.3	**(a)**	Define terms: Basic capacity (2) Possible capacity (3) Adjusted capacity.	03
	(b)	Differentiate between Off-street parking and Peripheral parking.	04
	(c)	Describe traffic forecast based on past trends and extrapolation.	07
Q.4	**(a)**	Draw rotary intersection showing all its elements.	03
	(b)	Give objectives and necessity of signal coordination.	04
	(c)	Explain queueing theory concept and its application in traffic engineering.	07
		OR	
Q.4	**(a)**	Explain uninterrupted flow conditions define by Highway Capacity Manual (HCM).	03
	(b)	Discuss various methods of On-street parking.	04
	(c)	Define term 'Level of service'. Also discuss various factors affecting level of service.	07
Q.5	**(a)**	Give requirements of intersections at grade.	03
	(b)	Write short note on intelligent transport system (ITS).	04
	(c)	Explain causes and preventive measures for accidents.	07
		OR	
Q.5	**(a)**	Differentiate between channelised and unchannelised intersections.	03
	(b)	Explain condition diagram used for traffic accidents studies.	04
	(c)	Describe strategic management solution for traffic problems.	07

****

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VI (NEW) EXAMINATION – SUMMER 2024

Subject Code: 3160615   **Date:24-05-2024**
Subject Name: Traffic Engineering and Management
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)**	Define: Spot speed, running speed, journey speed	**03**
	(b)	State the scope of traffic engineering	**04**
	(c)	Explain road user characteristics in detail.	**07**
Q.2	**(a)**	Explain types of traffic in brief.	**03**
	(b)	What is bottleneck situation in traffic? State the causes of it.	**04**
	(c)	Explain fundamental relationship between traffic flow parameters with neat sketches.	**07**
		OR	
	(c)	Enlist the methods of traffic volume count. Explain various methods for presentation of traffic volume data.	**07**
Q.3	**(a)**	Explain in brief the types of manoeuvres.	**03**
	(b)	Describe the need of traffic forecasting	**04**
	(c)	Enlist various methods of O-D survey. Explain road side interview survey.	**07**
		OR	
Q.3	**(a)**	Calculate space mean speed and time mean speed from the following spot speed data (in kmph) 65,68,51,43,68,54,52,58,44,38.	**03**
	(b)	Explain the ill effects of parking.	**04**
	(c)	Differentiate between Rotary and Roundabout.	**07**
Q.4	**(a)**	Classify intersection in detail based in various aspects.	**03**
	(b)	Define : cycle time, lost time, offset	**04**
	(c)	Explain signal co-ordination.	**07**
		OR	
Q.4	**(a)**	Write a short note on Traffic Island.	**03**
	(b)	Enlist various geometric design elements of rotary with neat sketch	**04**
	(c)	Explain the Webster's method for signal design	**07**
Q.5	**(a)**	State the advantages and disadvantages of full cloverleaf interchange.	**03**
	(b)	Write a short note on tidal flow operation.	**04**
	(c)	Explain causes and preventive measures of accidents	**07**

OR

Q.5 **(a)** Explain importance of ITS in traffic management   **03**
        (b) Write a short note on PCU.   **04**
        (c) Explain the concept of capacity and level of service with neat sketch   **07**

****

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VI (NEW) EXAMINATION – SUMMER 2023

Subject Code:3160615   **Date:14-07-2023**
Subject Name:Traffic Engineering and Management
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)**	Define following elements of traffic flow. (1) Speed (2) Volume (3) Density	**03**
	(b)	Explain various pavement surface characteristics.	**04**
	(c)	Describe various causes and preventive measures for accidents.	**07**
Q.2	**(a)**	What are benefits of channelized intersection?	**03**
	(b)	Explain need for traffic forecasting.	**04**
	(c)	Discuss traffic forecast based on past trends and extrapolation	**07**
		OR	
	(c)	Explain traffic forecasting based on past trends and extrapolation.	**07**
Q.3	**(a)**	What are purposes of traffic management?	**03**
	(b)	Write a short note on peripheral parking system.	**04**
	(c)	Describe various physical factors affecting behavior of road users.	**07**
		OR	
Q.3	**(a)**	How basic capacity of single lane is determined?	**03**
	(b)	Describe legislative measures may be adopted to reduce accidents.	**04**
	(c)	Define term "Kerb parking". Describe various types of off-street parking.	**07**
Q.4	**(a)**	What are adverse effects of parking?	**03**
	(b)	Describe various automatic counters used for traffic volume study.	**04**
	(c)	Which site conditions favoring grade separated intersection? Discuss diamond interchange in detail.	**07**
		OR	
Q.4	**(a)**	How spot speed data presented graphically?	**03**
	(b)	The average length of vehicle in traffic is 6 m and average distance is 3.5 m, between the vehicles. Take average time headway at maximum flow is 2.0 seconds. Calculate jam density, maximum flow and optimum speed.	**04**
	(c)	Enumerate various types of traffic signals. Also explain design of fixed time signals.	**07**
Q.5	**(a)**	Give importance of highway capacity in highway transportation studies.	**03**
	(b)	What are objectives of traffic demand management? Also list out commonly adopted techniques for traffic demand management	**04**
	(c)	Define level of service. Also discuss six level of services and factors affecting level of service.	**07**
		OR	
Q.5	**(a)**	Enlist ideal conditions for uninterrupted flow as per highway capacity manual.	**03**
	(b)	Draw various conflict point diagram for roads.	**04**
	(c)	Describe various traffic management measures are adopted to control traffic.	**07**

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VI (NEW) EXAMINATION – SUMMER 2022

Subject Code:3160615   **Date:10/06/2022**

Subject Name:Traffic Engineering and Management

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)**	As per IRC, mention the weight and maximum dimensions allowed in India.	**03**
	(b)	What is bottleneck? Discuss the assumptions in Lighthill and Witham's theory.	**04**
	(c)	Explain how the speed and delay studies are carried out.	**07**
Q.2	**(a)**	What is the need for traffic forecasting?	**03**
	(b)	Describe types of traffic. How the period traffic forecasting affect the transportation facility?	**04**
	(c)	Discuss traffic forecasting based on past trends.	**07**
		OR	
	(c)	Explain O and D survey used for travel demand.	**07**
Q.3	**(a)**	How to collect accident data? Discuss accident situation in Indian context.	**03**
	(b)	Draw condition and collision diagram used for accident study.	**04**
	(c)	Which are the design standards for parking facilities? Discuss in detail.	**07**
		OR	
Q.3	**(a)**	Which statistical methods are used for analysis of accident data?	**03**
	(b)	Discuss E's for road accident prevention.	**04**
	(c)	Explain various aspects to be investigated at the time of parking studies.	**07**
Q.4	**(a)**	Discuss advantages and limitations of rotary intersection regarding Indian traffic conditions.	**03**
	(b)	Differentiate grade separated and at grade intersections	**04**
	(c)	Explain various types of traffic signals. How the signal timings are decided?	**07**
		OR	
Q.4	**(a)**	Describe warrants for traffic signals.	**03**
	(b)	Explain various design factors considered in rotary intersection design.	**04**
	(c)	Design an isolated fixed time 2 – phase traffic signal for following design hour traffic flow for a right-angled intersection. Design optimum cycle length using Webster's formula and sketch timing diagram and phase diagram.	**07**

Flow/legs	North	East	South	West
Flow q in PCU/hr	1250	1350	900	930
Flow s in PCU/hr	3000	3500	2750	2550

Q.5 **(a)** Discuss the concept of level of service at the time of deciding the capacity of the highway   **03**

(b) Show conflict point diagram for one way and two way traffic system   **04**

(c) Discuss PCU for rural and urban area according to stated in Indo-HCM.   **07**

OR

Q.5 **(a)** List out the factors affecting highway capacity and level of service.   **03**

(b) Discuss role of ITS in traffic management system   **04**

(c) How theoretical capacity of highway is determined? Also explain basic capacity and practical capacity of highway.   **07**

****