

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER– VI (NEW) EXAMINATION – WINTER 2021****Subject Code:3160615****Date:04/12/2021****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: (1) Spot speed (2) Running speed (3) journey speed. | 03 |
| | (b) Explain PIEV Theory. | 04 |
| | (c) Explain collision diagram and condition diagram. | 07 |
| Q.2 | (a) What is scope of traffic engineering? | 03 |
| | (b) Write causes of road accidents. | 04 |
| | (c) Explain collision diagram and condition diagram. | 07 |
| | OR | |
| | (c) The length of a road stretch used for moving observer test is 0.5 km and the speed with which the test vehicle moved is 20 km/hr. Number of vehicles encountered in the traffic stream is 107. Number of vehicles that had overtaken the test vehicle is 10 and the number of vehicles overtaken by the test vehicle is 74. Find the flow, density and average speed of the stream. | 07 |
| Q.3 | (a) Explain different types of traffic. | 03 |
| | (b) Explain various off-street parking facilities. | 04 |
| | (c) Describe car following theory. | 07 |
| | OR | |
| Q.3 | (a) Describe need for traffic forecasting. | 03 |
| | (b) Ten spot speed surveys are: 63,69,40,75,72,58,65,34,38,47
Find: (1) Time mean Speed (2) Space mean Speed | 04 |
| | (c) Explain queuing theory concept and its application in traffic engineering | 07 |
| Q.4 | (a) Give ill effects of parking. | 03 |
| | (b) Define: Cycle, cycle length, interval, phase. | 04 |
| | (c) Explain various signs as per IRC with sketch. | 07 |
| | OR | |
| Q.4 | (a) Explain co-ordinated control of signals. | 03 |
| | (b) Give site conditions favouring grade separated intersections. | 04 |
| | (c) Enlist various types of traffic signals and describe fixed time signals. | 07 |
| Q.5 | (a) What is a tidal flow operation? | 03 |
| | (b) What is TSM ? Give objectives of TSM. | 04 |
| | (c) Explain level of service. Describe factors affecting level of service. | 07 |
| | OR | |
| Q.5 | (a) Define Capacity. Describe different types of highway capacity. | 03 |
| | (b) Write short note on : Rotary intersection. | 04 |
| | (c) Explain Passenger Car Unit (PCU) in reference to Indo-HCM in Urban and Rural area . | 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**
