Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– V (New) EXAMINATION – WINTER 2019

Subject Code: 2150601 **Date: 06/12/2019**

Subject Name: Highway 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.**

			MARKS
Q.1	**(a)**	Define the following (1) Overtaking Sight Distance (2) Traffic volume (3) Carriage way	**03**
	(b)	Give the classification of the rural road.	**04**
	(c)	Derive an expression for calculating Stopping sight distance on a highway.	**07**
Q.2	**(a)**	Define camber? What are the objects of camber?	**03**
	(b)	Explain PIEV Theory.	**04**
	(c)	Differentiate between Nagpur and Bombay Road development plan.	**07**
		OR	
	(c)	The speeds of overtaking and overtaken vehicles are 75 and 40 kmph respectively on a two way undivided traffic road. If the acceleration of overtaking vehicle is 0.98 m/sec^2 calculate the safe overtaking sight distance.	**07**
Q.3	**(a)**	Define (1) Flakiness Index (2) Elongation Index (3) Specific Gravity	**03**
	(b)	Explain ductility test on bitumen.	**04**
	(c)	Design the rate of super elevation for a horizontal curve for highway. The radius of curve is 550 m and speed is 100 kmph.	**07**
		OR	
Q.3	**(a)**	Describe desirable properties of the aggregate used for road construction.	**03**
	(b)	Distinguish between flexible pavement and rigid pavement.	**04**
	(c)	Describe Aggregate impact test with figure.	**07**
Q.4	**(a)**	Explain the construction procedure of WBM road.	**03**
	(b)	Compare tar and bitumen.	**04**
	(c)	Describe road arboriculture	**07**
		OR	
Q.4	**(a)**	Define (1) Running speed (2) Spot speed (3) Journey speed.	**03**
	(b)	State the difference between road safety reviews and road safety audit.	**04**
	(c)	Explain various measures for the reduction in accident rates.	**07**
Q.5	**(a)**	Enlist types of parking. Describe any one in details.	**03**
	(b)	Distinguish between Traffic Sign and Traffic Signal.	**04**
	(c)	Discuss requirements for pavement widening on horizontal curve.	**07**
		OR	
Q.5	**(a)**	Write a short note on road user's characteristics.	**03**
	(b)	State elementary principles of alignment in hilly areas.	**04**
	(c)	Describe sub surface drainage with figure.	**07**

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