GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–V (OLD) EXAMINATION – WINTER 2018

Subject Code:150601   **Date: 04/12/2018**

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.

Q.1	**(a)**	Explain with sketches the various factors controlling the alignment of roads.	**07**
	(b)	The speed of Overtaking and overtaken vehicles are 70 and 40 kmph respectively on a two way traffic road. If the acceleration of overtaking vehicle is 0.99 m/Sec^2. Adopt t = 2.0 sec. Calculate safe overtaking sight distance, Mention the minimum length of overtaking zone and Draw a neat-sketch of the overtaking zone.	**07**
Q.2	**(a)**	Explain the classification of roads based on location and function as Suggested in the Nagpur Road Plan.	**07**
	(b)	Calculate the extra width of a pavement required and super elevation on a horizontal curve of radius 300 m on a two lane highway for speed of 80 kmph. The design coefficient of lateral friction is 0.12 and wheel base is 6 m.	**07**

OR

	(b)	A National highway Passing through rolling terrain in heavy rain fall area has a horizontal curve of radius 500m, design speed 80kmph, pavement width 7.0m, rate of superelevation 1 in 150 about the inner edges. Design the length of transition curve, Assuming suitable data.	**07**
Q.3	**(a)**	Compare tar and bitumen. Explain softening point test on bitumen.	**07**
	(b)	Discuss about maintenance of highway along with failures of flexible and Rigid pavements.	**07**

OR

Q.3	**(a)**	Draw the sketch of flexible pavement and rigid pavement with description of components.	**07**
	(b)	Explain CBR test.	**07**
Q.4	**(a)**	Describe the step wise procedure of finding Specific Gravity of Aggregates.	**07**
	(b)	Explain various road signs with sketch.	**07**

OR

Q.4	**(a)**	Explain the road user characteristics.	**07**
	(b)	Enlist Methods of O and D Survey and Explain any one.	**07**
Q.5	**(a)**	What are the purposes of parking studies? Explain method of on street parking.	**07**
	(b)	What is arboriculture? Explain in detail.	**07**

OR

Q.5	**(a)**	What are the methods of subsurface drainage? Explain subsurface drainage system with transverse drain with neat sketch.	**07**
	(b)	Write Short note on : (i) IRC, (ii) CRRI	**07**

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