

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-V (NEW) EXAMINATION – WINTER 2020****Subject Code:2150601****Date:05/02/2021****Subject Name:Highway Engineering****Time:10:30 AM TO 12:30 PM****Total Marks: 56****Instructions:**

1. Attempt any FOUR questions out of EIGHT questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

		MARKS
Q.1	(a) Sketch a neat titled cross section of road showing pavement layers of flexible pavement.	03
	(b) Define: (i) Traffic volume (ii) Time-mean speed (iii) Density of traffic (iv) Stopping Sight Distance	04
	(c) Enlist and discuss briefly factors controlling the alignment of Highway	07
Q.2	(a) Compute stopping sight distance for design speed 100 kmph, coefficient of longitudinal friction 0.35 and descending gradient of 2%.	03
	(b) Draw cross section of NH or SH in rural area showing usual dimensions.	04
	(c) Discuss Camber, its importance, recommended values for bituminous surface, and shapes of cross slope.	07
Q.3	(a) Mention desirable properties of soil as road construction material.	03
	(b) Compare Bitumen and Tar.	04
	(c) Calculate msa or CSA for flexible pavement design from the following data: Observed CVPD = 500, Growth rate: 6%, Design life = 10 years	07
Q.4	(a) Mention desirable properties of stone aggregates used for road construction.	03
	(b) What are Bitumen Emulsion and Cutback Bitumen? What is their application?	04
	(c) Calculate EWLF or VDF in terms of standard axle load of 10.5 t for Axle loads 5 t and 15 t.	07
Q.5	(a) Enlist factors considered for design of flexible pavements.	03
	(b) Differentiate between Flexible pavement and Rigid pavement.	04
	(c) Briefly discuss construction of bituminous layers.	07
Q.6	(a) Explain with sketch Expansion joint in CC pavement.	03
	(b) Illustrate with neat titled sketch any one typical system of road drainage.	04
	(c) Mention the distresses in flexible pavements and methods used for structural evaluation of flexible pavements.	07

- Q.7** (a) Mention major areas of study of traffic engineering. **03**
(b) Explain the terms PCU, CVC and AADT. **04**
(c) Describe in brief types and methods of O&D studies and presentation of O&D data. **07**
- Q.8** (a) Mention different traffic engineering studies generally carried out. **03**
(b) Explain Cumulative frequency distribution diagram of spot speeds. **04**
(c) State different categories of traffic signs and their purpose and main distinct features. **07**

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