

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-V (NEW) EXAMINATION – SUMMER 2019

Subject Code: 2150601

Date: 17/06/2019

Subject Name: Highway Engineering

Time: 02:30 PM TO 05:00 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) What is the width of carriageway? 03
(b) What is road safety audit? 04
(c) Classify road patterns with sketch. 07
- Q.2** (a) Write in brief about street lighting. 03
(b) Which factors are considered for the design of pavements? 04
(c) Discuss about failures in flexible and rigid pavements. 07
- OR**
- (c) Discuss about road drainage with sketch and significance. 07
- Q.3** (a) List basic tests for bitumen as highway construction material. 03
(b) What are the desirable properties of good bituminous mix? 04
(c) What is the difference between flexible and rigid pavement? Discuss about pavement components with sketch. 07
- OR**
- Q.3** (a) List basic tests for coarse aggregate as highway construction material. 03
(b) What are the desirable properties of soil as highway construction material? 04
(c) What is GI? Explain CBR method of pavement design with limitations of the method. 07
- Q.4** (a) Calculate superelevation required for a concrete road 7.5 m wide on a curve of 800 m radius at a design speed of 50 kmph. 03
(b) Sketch highway cross section on embankment showing elements on it. 04
(c) What is Stopping and overtaking sight distance? Calculate the minimum stopping sight distance on a highway at a descending gradient of 6%. Design speed is 80 kmph. Reaction time of driver is 2.5 seconds. Coefficient of friction between tyre and road surface is 0.4. 07
- OR**
- Q.4** (a) Find the total widening required for a four lane highway on a horizontal curve of radius 400 m. The design speed of highway is 80 kmph and the length of longest base of vehicle expected on the highway is 7.0m. 03
(b) What is gradient? What are the types of it? 04
(c) What are the types of curves provided in highway? Explain in detail about transition curve along with determination of length of curve and types of transition curve. 07
- Q.5** (a) What are the preventive measures of accident? 03
(b) What are the types of traffic signs? 04
(c) Explain traffic flow characteristics with relationship plots/sketches among traffic flow parameters. 07
- OR**
- Q.5** (a) What are the types of parking? 03
(b) What are the types of intersection? 04
(c) Discuss about roaduser characteristics. 07
