

**GUJARAT TECHNOLOGICAL UNIVERSITY****PDDC - SEMESTER-V. EXAMINATION – SUMMER 2016****Subject Code:X50601****Date:11/05/2016****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) Briefly summaries the characteristics of road transport. **07**  
(b) Show typical sketch of highway in cutting. Discuss about the factors which control the geometric elements of highway. **07**
- Q.2** (a) Explain (i) Central Road Fund (ii) Indian Road Congress **07**  
(b) Define the alignment of roads. What are the requirements of ideal alignments? **07**
- OR**
- (b) (i) Explain the PIEV theory **07**  
(ii) Derive the expression for OSD.
- Q.3** (a) Give the index properties of soil. **07**  
(b) State the objects of widening of pavement on horizontal curves. What are the factors on which the design of widening depends? Explain. **07**
- OR**
- Q.3** (a) Describe the test procedure of “Aggregate Los Angeles test”. **07**  
(b) Calculate the maximum permissible speed on a horizontal curve of radius 125 m of a highway designed for a speed of 65 KMPH to carry mixed traffic, if the super elevation is not to exceed 7 percent. **07**
- Q.4** (a) (1) Give classification of maintenance operation of roads. **07**  
(2) Describe the maintenance of bituminous road.  
(b) What are the desirable characteristics of road side tree plantations **07**
- OR**
- Q.4** (a) ( i ) Explain sub surface drainage. **07**  
( ii ) State elementary principles of alignment in hilly areas.  
(b) Describe desirable property of bitumen. **07**
- Q.5** (a) Describe road user characteristics. **07**  
(b) What are the causes of road accidents? Explain. **07**
- OR**
- Q.5** (a) Enlist types of parking. Explain any two. **07**  
(b) Explain Spot speed, Running speed and Journey speed. How is the spot speed studies carried out? **07**

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