

Seat No.: \_\_\_\_\_  
No. \_\_\_\_\_

Enrolment

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**M. E. - SEMESTER – I • EXAMINATION – WINTER • 2014**

**Subject code: 711308N**

**Date: 05-12-2014**

**Subject Name: Highway Geometric Design**

**Time: 10:30 am - 01:00 pm**

**Total Marks: 70**

**Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full mark.

- Q.1 (a)** What is camber? What are the objects of camber? Discuss the factors affecting camber. Specify the recommended ranges of camber for different types of pavement surfaces **07**
- (b)** Derive an expression for calculating the overtaking sight distance on a highway. **07**
- Q.2 (a)** Determine the height of crown with respect to the edges of the road in the following cases: (a) WBM road 3.8m wide in areas of low rainfall (b) WBM road 7.0m wide in areas of heavy rainfall (c) Bituminous road 7.5m wide (d) concrete road 7.5m wide **07**
- (b)** Explain the procedure for designing ruling gradient. **07**
- OR**
- (b)** Discuss the recommendations of IRC for alignment. **07**
- Q.3 (a)** What is the importance of widening of pavement on horizontal curves? Explain mechanical widening. **07**
- (b)** How do the vehicular characteristics affect the Geometric Design standards? Explain briefly. **07**
- OR**
- Q.3 (a)** What are the functions of median and curb? Mention the current Indian standards for them. **07**
- (b)** Discuss the factors to be considered in the design of sight distance at intersection. **07**
- Q.4 (a)** Explain the role of surveying equipments in setting up of transition curves **07**
- (b)** Describe channelization **07**
- OR**
- Q.4 (a)** Write a note on set back distances **07**
- (b)** Explain various principles of intersection design for safety of traffic. **07**
- Q.5 (a)** Explain the factor to be considered in geometric design of rail-road level crossing in the urban and rural regions. **07**
- (b)** Explain the concept of geometric design of the fly over in the urban region. **07**
- OR**
- Q.5 (a)** Write a note on grade separated intersections. **07**
- (b)** Write a note on island geometrics **07**

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