

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

Enrolment

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**BE – SEMESTER – V (NEW) EXAMINATION – WINTER 2015**

**Subject Code: 2150601**

**Date:17/12/ 2015**

**Subject Name: Highway Engineering**

**Time:10:30am to 1:00pm**

**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)** Describe Nagpur road plan with its salient features. **07**  
**(b)** Write short note on **07**  
(i) Central Road Research Institute(CRRI)  
(ii) Central Road Fund (CRF).
- Q.2 (a)** Explain briefly the various stages of work in a new highway project. **07**  
**(b)** (i)Give IRC standard for carriageway width and formation width. **04**  
(ii) Calculate the value of (i) Head light sight distance (ii) Intermediate sight distance for a highway with a design speed of 65 kmph. Take  $t = 2.5\text{sec}$ ,  $f = 0.36$  **03**  
**OR**  
**(b)** Explain curve resistance and compensation in gradient on horizontal curves. **07**
- Q.3 (a)** Explain Total reaction time of driver. Explain PIEV Theory. **07**  
**(b)** Calculate the extra width of pavement required on a horizontal curve of radius 700 m on a two lane highway. The design speed being 80 kmph. Assume wheel base is 6 m. **07**  
**OR**
- Q.3 (a)** Explain desirable properties of bituminous mix. **07**  
**(b)** Difference between flexible and Rigid pavement. **07**
- Q.4 (a)** Explain Particle size classification as per IS. **07**  
**(b)** Describe Plate load test with figure. **07**  
**OR**
- Q.4 (a)** List out various properties of aggregate. Explain flakiness and elongation index test of aggregate. **07**  
**(b)** Explain subsurface drainage system with transverse drain with neat sketch. **07**
- Q.5 (a)** Write short note on ESWL. **07**  
**(b)** Explain various types of failures in Cement concrete pavements & their causes. **07**  
**OR**
- Q.5 (a)** Draw neat sketches (i) Clover leaf interchange (ii) Rotary Interchange (ii) **07**  
Diamond Interchange.  
**(b)** Show the conflict point at the intersection of the following types **07**  
(i) Cross roads, both two-way  
(ii) Cross roads, one way

\*\*\*\*\*