

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-V • EXAMINATION – WINTER 2013

Subject Code: 150601**Date: 27-11-2013****Subject Name: Highway Engineering****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 marks.

- Q.1** (a) Explain phase wise developments of National Highway Projects. **07**
 (b) (i) Give classification of Urban roads **03**
 (ii) Give classification of highways according to Nagpur Road Plan **04**
- Q.2** (a) Define highway alignment. What are the requirements of ideal alignment of road? **07**
 (b) (1) Define : **04**
 (i) Right of way (ii) Roadway width (iii) Carriage way (iv) Shoulder
 (2) Explain IRC and CRRI. **03**
- OR**
- (b) (1) Draw a typical cross section of National Highway in embankment with dimensions as per IRC. **04**
 (2) Draw the sketch of sight distance at cross road. **03**
- Q.3** (a) Give classification of soil according to Highway Research Board. **07**
 (b) Describe the step wise procedure of finding Specific Gravity of Aggregates. **07**
- OR**
- Q.3** (a) Explain PIEV theory. Calculate the extra width of pavement required on horizontal curve of radius 700 m on two lane highway. The design speed is 80 kmph. Assume $l = 6$ m. **07**
 (b) Draw the sketch of flexible pavement and rigid pavement with description of components. **07**
- Q.4** (a) What is design speed? Determine permissible speed on curve having radius 135 m with super elevation 12%. Coefficient of friction is 0.14. **07**
 (b) Describe the step wise construction procedure of bitumen carpet road. **07**
- OR**
- Q.4** (a) (1) Give classification of maintenance operation of roads. **03**
 (2) Describe the maintenance of bituminous road. **04**
 (b) (1) What is the necessity of surface drainage? **03**
 (2) Draw the sketch of hill road showing its component. **04**
- Q.5** (a) (1) What are the purposes of Arboriculture? **03**
 (2) Explain PPP mode in context to road administration. **04**
 (b) Differentiate between road safety audit & road safety review. **07**
- OR**
- Q.5** (a) (1) What are the objectives of speed studies? **03**
 (2) Define – Running Speed, Spot Speed, Journey Speed, Space Mean Speed **04**
 (b) Distinguish between Traffic Sign and Traffic Signal. Draw the sketch of Regulatory sign vertical post and Warning sign vertical post with dimension **07**
