

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-V(New) • EXAMINATION – WINTER 2016

Subject Code:2150601

Date:02/12/2016

Subject Name:Highway Engineering

Time:10:30 AM to 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 Answer the following questions in short: 14**
- 1 Define highway engineering.
 - 2 What do you mean by PMGSY & NTPC?
 - 3 Define safe passing sight distance.
 - 4 What is superelevation?
 - 5 Define ruling gradient.
 - 6 What do you mean by ADT?
 - 7 Define highway capacity.
 - 8 What is traffic density?
 - 9 What is plate bearing test?
 - 10 Define emulsion.
 - 11 What do you mean by ESWL?
 - 12 What is traffic control device?
 - 13 What is surface drainage?
 - 14 What is 'PPP'?
- Q.2 (a) State the objectives of preliminary survey in the highway alignment projects. 03**
- (b) Explain star and grid pattern with advantages of it. 04**
- (c) State the objects of widening pavement on horizontal curves? What are the factors on which the design of widening depends? 07**
- OR**
- (c) A radius of 250m has to be provided at a locality due to site restrictions in a National Highway with design speed 100kmph. Design the super elevation. Should there be any restriction in speed? 07**
- Q.3 (a) What is routine maintenance of highway? State the items included under it. 03**
- (b) Explain the desirable properties of aggregates to be used in pavement construction. 04**
- (c) What is a land slide and how it occurs on hill roads? State how prevention of land slide can be done 07**
- OR**
- Q.3 (a) Explain briefly the basic principles of soil stabilization. 03**
- (b) State the desirable properties of bituminous mix for pavement surface course. 04**
- (c) Describe step wise procedure of penetration test of bitumen. 07**
- Q.4 (a) State the functions of catch water drain. 03**
- (b) State the limitations of flexible pavements. 04**
- (c) Explain the basic principle of CBR method of pavement design. State the advantages and disadvantages of it. 07**
- OR**
- Q.4 (a) State the factors affecting design and performance of rigid pavement. 03**
- (b) Explain how variation in moisture content affects flexible pavement design. 04**

- (c) What is arboriculture? State the steps in operation of planting of trees on road side development. **07**
 - Q.5**
 - (a) State the usefulness of spot speed studies with respect to traffic engineering. **03**
 - (b) State the factors affecting traffic stream flow characteristics. **04**
 - (c) State the various measures of enforcement that may be useful to prevent accidents on spots prone areas of road. **07**
- OR**
- Q.5**
 - (a) State the advantages and disadvantages of an overpass. **03**
 - (b) What are the various types of road markings and their uses? **04**
 - (c) State the concept of PCU value and the factors affecting PCU values. **07**
