Roll No. Total No. of Pages : 02

Total No. of Questions: 09

B.Tech.(CE) (2011 Onwards) (Sem.-5) TRANSPORTATION ENGINEERING-I

Subject Code: BTCE-504 Paper ID: [A2081]

Time: 3 Hrs. Max. Marks: 60

### **INSTRUCTION TO CANDIDATES:**

- SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
- 2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
- SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.
- 4. Assume any missing data suitably.

### **SECTION-A**

## 1. Write short notes on:

- a. List the various cross sectional elements of a national highway.
- b. What is Subgrade?
- c. List the basic requirements of an ideal alignment.
- d. Distinguish between camber and longitudinal slope.
- e. List the various flexible pavement failures.
- f. Why extra widening is provided on curves?
- g. What are the requirements of a subbase?
- h. List the vehicular characteristics considered for geometric design of roads.
- i. What is Time mean speed?
- j. List the various mitigation Measures for Vehicular Pollution.

### **SECTION-B**

- 2. What are the different types of signal systems? Explain any two systems
- 3. Explain the Relevance of systems of Intelligent Transportation in the present scenario.
- 4. Name the Laboratory tests conducted to determine the suitability of aggregates for road construction and explain the significance of each test.
- 5. How are Cement Concrete pavements maintained?
- 6. Explain briefly the method of Construction of Roads in Water Logged Areas.

# **SECTION -C**

- 7. What are the causes of development of Potholes and how they are repaired in Bituminous roads?
- 8. A 7.0m state highway passing through a plain terrain has a horizontal curve of radius equal to ruling minimum radius. Calculate:
  - i. Superelevation
  - ii. Extrawidening
  - iii. Length of transition curve.

Assume design speed of 80Kmph and provide the superelevation by the rotation of the pavement about the center line.

9. Explain the method of benefit cost analysis in the case of Highways.