

**R13**

Code No: 126AE

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year II Semester Examinations, May - 2017

TRANSPORTATION ENGINEERING - I

(Civil Engineering)

Time: 3 hours

Max. Marks: 75

**Note:** This question paper contains two parts A and B.  
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

**PART - A****(25 Marks)**

- 1.a) List the various types of road patterns. [2]
- b) List the various requirements of Highway Ideal Alignment [3]
- c) List the various assumptions in the analysis of safe Overtaking Sight Distance. [2]
- d) Calculate the extra width required for a two lane highway having a horizontal curve of radius 200m, if the design speed is 80 Km/h. [3]
- e) Draw a neat sketch of Condition and Collision diagram. [2]
- f) Define traffic volume and traffic density and speed. [3]
- g) List the factors to be considered in the design of intersection at grade. [2]
- h) List the various types of on street and off street parking facilities. [3]
- i) List the various tests to be conducted to evaluate the strength properties of soils [2]
- j) Differentiate between Tack Coat and Prime Coat. [3]

**PART - B****(50 Marks)**

- 2.a) Discuss in detail, the various factors controlling the highway alignment with sketches.
  - b) What is the necessity of Realignment? List and explain the various steps in Realignment. [5+5]
- OR**
- 3.a) What are the various recommendations of Jayakar Committee? How were these implemented?
  - b) What are the various methods of classifying roads? Briefly outline the classification of urban roads. [5+5]
- 4.a) Explain PIEV Theory and the total reaction time of driver.
  - b) Calculate the length of transition curve using the following data:  
Design speed = 65 Km/h, Radius of circular curve = 220m, pavement width including extra widening = 7.5 m, allowable rate of introduction of super elevation (pavement is rotated about the centerline) is 1 in 150. [5+5]
- OR**
- 5.a) With the help of a neat sketch, explain the attainment of super elevation in the field.
  - b) Calculate the length of vertical valley curve required between -1/30 and +1/25 grades for a speed of 80 Km/h to satisfy comfort and headlight sight distance requirements. [5+5]