Code No: C8701 **R09**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech I - Semester Examinations, March 2011
HIGHWAY INFRASTRUCTURE ENGINEERING
(HIGHWAY ENGINEERING)

Time: 3hours **Max. Marks: 60**

Answer any five questions
All questions carry equal marks
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1. a) What are the factors affecting highway capacity and level of service?
   b) Explain the factors affecting pavement surface characteristics. How are they measured? [6+6]

2. a) From fundamentals derive the equation for super elevation.
   b) What are the objectives and the methods of attaining of super elevation? [6+6]

3. a) What is an Rotary Intersection and discuss its advantages and disadvantages.
   b) What are the design pavements of Rotary Intersection? Explain the warrants and limitations of Rotary Intersection. [6+6]

4. a) What are the various types of traffic markings commonly used? What are the uses of each?
   b) With neat sketches show the various types of traffic signs. Classify them in proper groups. [6+6]

5. a) What are the various types of parking facilities designed for traffic needs? Compare kerb parking with off-street parking.
   b) Compare:
      i) Angle parking with parallel parking.
      ii) Ramp type and elevator type parking garages. [6+6]

6. a) Derive an expression for calculating the overtaking sight distance in a highway.
   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 any missing data suitably. [6+6]

7. a) Discuss the various types of intersection and emphasis the design of at grade intersection. Bring out the advantages and disadvantages of at grade and grade separated intersection.
   b) What are requirements and facilities provided to pedestrians in urban roads? [6+6]

8. Answer any three:
   a) Camber.
   b) Highway Appurtenances.
   c) Design criteria for vertical curve. [12]
   d) Types of gradient.

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