R09

Code No: C8701

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech I - Semester Examinations, April/May-2012
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) Explain various design controls of Highway infrastructure. List the various geometric elements to be considered in Highway design.
b) How do you measure the road roughness? What are the various factors affecting skid resistance?

2.a) How do you design the traffic capacity, level of service and design speed for a highway system?
b) What are the major objectives of highway geometric design? Enumerate the factors governing the width of carriage way.

3.a) Derive an expression for finding the 'super elevation' required for a Highway horizontal curve, if the design coefficient of lateral friction is 'f'. Design the `super elevation' required at a horizontal curve of radius 315 m for the design speed of 90 kmph.
b) Derive an expression for calculating the overtaking sight distance of two way traffic and two lane National highway. Find the overtaking sight distance for a highway having a design speed of 110 kmph, assume all the data suitably as per IRC.

4.a) Explain the concept of transition curves. How do you introduce centrifugal acceleration in transition curve of horizontal highway curves?
b) Describe various types of intersections with neat sketches. What are the advantages and disadvantages of rotary intersection?

5.a) Write the significance of traffic signs and road markings in traffic management. Explain information signs, design standards with neat sketches and dimensions.
b) What are the various types of road markings available as per the IRC in road safety and traffic regulation? Explain with neat sketches.

6.a) How do you plan for bus bays in intermediate city? What are the various types of bus bays generally adopted in the urban areas? Explain with neat sketches.
b) Explain the concept of off street and on street parking systems with advantages and disadvantages.

7.a) Explain the guidelines and design standards for providing cycle tracks?
b) What are the various requirements of pedestrians? How do you provide the pedestrian facilities for Hyderabad Urban roads?

8. Write a short note on any three of the following
a) Surface Characteristics b) Foot over bridges and Subways planning
c) Road Margins and Regulatory signs d) Traffic Impact Attenuators
e) Design of Vertical Curves.

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