Code No: 09A60105 | R09 | SET-1

B. Tech III Year II Semester Examinations, April/May - 2012
TRANSPORTATION ENGINEERING
(CIVIL ENGINEERING)

Time: 3 hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks

1.a) What are the recommendations of Jayakar Committee for the systematic and scientific highway development in India.
b) Explain the salient features of Nagpur Road Development Plan. [8+7]

2. What is highway alignment? What are the requirements of good highway alignment? What factors influence the final alignment of a highway? Explain with the support of suitable sketches. [15]

3.a) Explain the need for extra widening on a horizontal curve.
b) Calculate the rate of super elevation to be provided at a horizontal curve of radius 400 m on a plain terrain for a design speed of 100 kmph. Is there a need for restricting the super elevation? If so, what is the restricted super elevation rate and find out whether there is need to restrict the speed or not. [5+10]

4.a) Explain the manual method of conducting traffic volume studies.
b) Describe in detail the parking usage survey by patrolling method. [7+8]

5. Explain the classification of Traffic Signs. Give the specifications of each type with suitable sketches and give at least two examples for each type. [15]

6. What are the various types of at-grade intersections possible? Describe the same with suitable sketches showing their lay out. [15]

7. What do you understand by Creep of rails? Explain the theories related to the creep of rails. [15]

8.a) What are the different corrections to be made for the standard runway length to obtain the actual runway length? Explain.
b) The length of a runway under standard conditions is 1540 m. The airport site has an elevation of 280 m and its reference temperature is 33.5^0C. If the runway is to be constructed with an effective gradient of 0.20 percent, determine the corrected runway length. [7+8]

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Code No: 09A60105 | R09 | SET-2

B. Tech III Year II Semester Examinations, April/May - 2012
TRANSPORTATION ENGINEERING
(CIVIL ENGINEERING)

Time: 3 hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks

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1. Explain about the salient features of Nagpur Road Development plan and Bombay Road Development Plan. What are the main differences between the two plans? Discuss. [15]

2. Define Super elevation. Derive an expression for computing the rate of super elevation for a road section on a horizontal curve analyzing the various forces acting on the vehicle moving on the curve. [15]

3.a) Derive an expression for overtaking sight distance on a two lane two way road. Support your derivation with a neat sketch showing the overtaking operation and various distance components involved.
b) Calculate the OSD required on a National Highway with a design speed of 100 kmph. Take the rate of acceleration as 1.75 kmph /sec and assume any other data required suitably. [7+8]

4.a) Explain the methods of presenting the speed studies data.
b) What are the causes of road accidents and what kind of preventive measures can be adopted to reduce road accidents? Explain. [15]

5. Explain the classification of Traffic Signs. Give the specifications of each type with suitable sketches and give at least two examples for each type. [15]

6. With the help of a neat diagram indicating the various geometric elements of a traffic rotary, explain about the design elements of a rotary intersection. [15]

7.a) What is the need for providing a crossing in a railway track? Explain.
b) In a layout of a BG yard, a 6^0 curve branches off from a 3^0 main curve in opposite direction. If the speed is restricted to 22 kmph on branch line and permissible value of cant deficiency is 7.61 cm, determine the speed restriction on main line. [7+8]

8.a) Write the factors affecting selection of site for an Airport.
b) The length of a runway under standard conditions is 1540 m. The airport site has an elevation of 280 m and its reference temperature is 33.5^0C. If the runway is to be constructed with an effective gradient of 0.20 percent, determine the corrected runway length. [7+8]

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Code No: 09A60105 | R09 | SET-3

B. Tech III Year II Semester Examinations, April/May - 2012
TRANSPORTATION ENGINEERING
(CIVIL ENGINEERING)

Time: 3 hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks
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1. Explain how the social and economic development of a country is linked to a systematic and scientific road development. [15]

2. What are obligatory points? How do they influence highway alignment? Explain with the help of neat sketches. [15]

3.a) Define Stopping Sight Distance. Derive an expression for computing SSD on a level road.

b) What are the objectives of providing transition curves on horizontal curves? Explain. Discuss the methods of computing the length of transition curves. [15]

4. What are the various parking parameters about which data is collected in a parking study? Define and explain them. Explain clearly the method of Parking Inventory Study on a road section. [15]

5. At an intersection formed by meeting of North-South road and East- West road, a three phase signal with exclusive right turning phase from North and South is to be designed . Each of the North and South approaches have exclusive right turning lane and two lanes of 3.50 m for straight and left flows. The radius of right turning is 20 m, Right turning from East and West is not permitted at the intersection. The total width of East –West Road is 12m. The traffic flow in pcu/hour is as follows.

From	North			East		South			West	
To	E	S	W	S	W	W	N	E	N	E
Flow	60	600	150	70	400	160	600	160	80	500

Assume amber of 3 seconds and inter green time of 4 seconds. Give the phasing diagram and timing diagrams for each phase adopting Webster's method of isolated signal design. [15]

6. With the help of a neat diagram indicating the various geometric elements of a traffic rotary, explain about the design elements of a rotary intersection. [15]

7. With the help of a typical diagram, explain the components of a permanent way and also discuss about their functions in the railway track. [15]

8. What factors are to be given consideration in the selection of a site for an Airport? Explain. [15]

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Code No: 09A60105 | R09 | SET-4

B. Tech III Year II Semester Examinations, April/May - 2012
TRANSPORTATION ENGINEERING
(CIVIL ENGINEERING)

Time: 3 hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks

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1. What are the important events in the scientific and systematic highway development in India? Explain. [15]

2.a) What are the important design controls influencing the geometrics of a road? Discuss.
b) Explain the types of sight distances used in the geometric design of highways and their importance. [15]

3.a) Derive an expression for overtaking sight distance on a two lane two way road. Support your derivation with a neat sketch showing the overtaking operation and various distance components involved.
b) Calculate the OSD required on a National Highway with a design speed of 100 kmph. Take the rate of acceleration as 1.75 kmph /sec and assume any other data required suitably. [15]

4.a) Define Traffic Volume, Speed and Density. What are the units in which each of these parameters is measured? Explain. Explain their inter relationship.
b) Explain about Condition diagram and Collision diagram. [15]

5. Describe various types of traffic signs used in traffic control and regulation giving at least two examples for each type. Support your answer with suitable sketches and specifications for the signs. [15]

6. With the help of a neat diagram indicating the various geometric elements of a traffic rotary, explain about the design elements of a rotary intersection. [15]

7.a) Explain the necessity of sleepers in railway track. What are the desirable qualities of good sleepers?
b) In a layout of a BG yard, a 6^0 curve branches off from a 3^0 main curve in opposite direction. If the speed is restricted to 22 kmph on branch line and permissible value of cant deficiency is 7.61 cm, determine the speed restriction on main line. [15]

8.a) What are the various corrections to be applied to standard runway length to obtain the actual length of a runway? Explain.
b) Write brief note on runway lighting system. [15]

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