

Code No: V3206**R07****Set No: 1**

III B.Tech. II Semester Supplementary Examinations, November/December - 2012

TRANSPORTATION ENGINEERING
(Civil Engineering)**Time: 3 Hours****Max Marks: 80**Answer any FIVE Questions
All Questions carry equal marks

1. (a) Briefly outline the highway development in India.
(b) Briefly explain the engineering surveys needed for locating a new highway.
2. (a) Derive an expression for finding the stopping sight distance at level and at grades.
(b) A vertical summit curve is formed at the intersection of two gradients, +3.0 and -5.0 percent. Design the length of summit curve to provide a stopping sight distance for a design speed of 80 kmph. Take $t = 2.5$ sec and $f = 0.35$
3. What are the different causes of traffic accidents? Explain various measures that may be taken to prevent accidents.
4. Explain the various types of traffic signs with neat sketches.
5. (a) What are the objects of providing channelized intersections?
(b) Explain the advantages and limitations of a Rotary intersection.
6. (a) What are the requirements of an ideal permanent way?
(b) Explain the necessity of sleepers in railway track. What are the desirable qualities of good sleepers?
7. (a) Briefly discuss about negative superelevation in railway track.
(b) If a 8 degree curve track diverges from a main curve of 5 degree in an opposite direction in the layout of a B.G. yard, calculate the superelevation and the speed on the branch line, if the maximum speed permitted on the main line is 45 kmph.
8. Explain various factors affecting the selection of a suitable site for an airport.

Code No: V3206**R07****Set No: 2**

III B.Tech. II Semester Supplementary Examinations, November/December - 2012

TRANSPORTATION ENGINEERING
(Civil Engineering)**Time: 3 Hours****Max Marks: 80**Answer any FIVE Questions
All Questions carry equal marks

1. (a) Explain the necessity and objects of highway planning.
(b) What are the various objectives of preliminary survey for highway alignment? Enumerate the details to be collected and the various steps in the conventional method.
2. (a) Enumerate the steps for practical design of superelevation.
(b) The design speed of a highway is 80 kmph. There is a horizontal curve of radius 200 m on a certain locality. Calculate the superelevation needed to maintain this speed. If the maximum superelevation of 0.07 is not to be exceeded, calculate the maximum allowable speed on this horizontal curve as it is not possible to increase the radius. Safe limit of transverse coefficient of friction is 0.15.
3. What are the objects of carrying out traffic volume studies? Explain the different methods of carrying out traffic volume studies.
4. Explain the various types of Road markings commonly used?
5. Explain the various design factors that are to be considered in rotary intersection design.
6. (a) Draw a typical cross section of a permanent way. Discuss in brief the basic functions of various components of the railway track.
(b) What is Creep? Discuss the theories propounded for the probable causes of creep.
7. (a) Define superelevation. What are the objects of providing superelevation on curves of a railway track.
(b) Explain various gradients used on railway tracks.
8. Name the different characteristics of aircrafts. How do they affect the planning and design of airports?

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R07

Set No: 3

III B.Tech. II Semester Supplementary Examinations, November/December - 2012

TRANSPORTATION ENGINEERING
(Civil Engineering)

Time: 3 Hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. (a) what are the significant recommendations of Jayakar Committee Report? Mention how this helped in road development in India.
(b) What are the various requirements of an ideal alignment? Discuss briefly.
2. (a) Derive an expression for calculating the overtaking sight distance on a highway.
(b) The speed of overtaking and overtaken vehicles are 70 and 40 kmph, respectively on a two way traffic road. If the acceleration of overtaking vehicle is 0.99 m/s^2 , calculate the safe overtaking sight distance.
3. Explain how the speed and delay studies are carried out? What are the various uses of speed and delay studies?
4. (a) Explain the Webster's method for the design of traffic signal cycles for fixed time traffic signals at cross roads.
(b) The average normal flow of traffic on cross roads A and B during design period are 400 and 250 pcu per hour. The saturation flow values on these roads are estimated as 1250 and 1000 pcu per hour respectively. The all red time required for pedestrian crossing is 12 seconds. Design two phase traffic signal by Webster's method.
5. (a) What are the various types of traffic islands used? Explain the uses of each.
(b) What are the advantages of channelized intersection?
6. (a) What is the ballast in permanent way? Mention the functions of ballast and state the requirements of a good ballast material.
(b) Briefly discuss about spacing of sleepers and sleeper density.
7. (a) Explain the necessity of grade compensation at curves in a railway track.
(b) The ruling gradient has been fixed as 1 in 200 on a section of B.G. track. What should be the compensated gradient when a 4 degree horizontal curve is also to be introduced on this ruling gradient?
8. Explain how the basic runway length is determined on the basis of the performance characteristics of jet and conventional engine aircrafts.

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Code No: V3206**R07****Set No: 4**

III B.Tech. II Semester Supplementary Examinations, November/December - 2012

TRANSPORTATION ENGINEERING
(Civil Engineering)**Time: 3 Hours****Max Marks: 80**Answer any FIVE Questions
All Questions carry equal marks

1. (a) Explain briefly the modified classification of road system in India as per the Third Twenty Year Road Development Plan, 1981-2001.
(b) Explain with sketches the various factors controlling the alignment of roads.
2. (a) Derive an expression for finding length of transition curve on horizontal alignment of highways.
(b) Calculate the length of transition curve and the shift using the following data.
Design speed = 65 kmph; Radius of circular curve = 220 m; Allowable rate of introduction of superelevation (pavement rotated about the centre line) = 1 in 150; pavement width including extra widening = 7.5 m.
3. Explain spot speed, running speed, space mean speed, time mean speed and average speed. How are spot speed studies carried out?
4. (a) What are the advantages and disadvantages of traffic signals?
(b) Explain IRC method for the design of fixed time traffic signals at cross roads.
5. (a) Explain Grade separated intersections, the advantages and limitations.
(b) What are relative advantages and disadvantages of over-pass and under-pass?
6. (a) Describe the functions and requirements of rails in a railway track.
(b) Explain the functions of fish plates and fish bolts. What are the essential requirements of fish plates?
7. (a) What is cant deficiency? Give the permissible values of cant deficiency in India.
(b) A 6 degrees curve branches off from a 3 degrees main curve in an opposite direction in the layout of a B.G. yard. If the speed on branch line is limited to 35.5 kmph, determine the speed restriction on the main line? Given cant deficiency = 7.62 cm.
8. What is a wind rose diagram? What is its utility? What are its types? Explain each type.

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