

Code No: V3206/R07

III B. Tech - II Semester Regular, Examinations, April/May 2011

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? [8+8]
(b) Derive an equation for finding the super elevation required at a horizontal curve.
2. (a) Explain the vertical curves with the help of neat sketches. [8+8]
(b) Differentiate stopping sight distance, overtaking sight distance and stopping sight distance.
3. (a) Enumerate the different methods of carrying out speed and delay studies [8+8]
(b) With neat sketches show various types of traffic signs.
4. (a) Explain various types of traffic islands with the help of neat sketches [8+8]
(b) How are the traffic signal times decided based on the IRC method.
5. (a) What are the different types of rails. Explain. [8+8]
(b) Write a note on sleeper density.
6. (a) Briefly explain the various types of signals in railway engineering. [8+8]
(b) Calculate the maximum permissible speed on a curve at high speed broad gauge track having the following particulars
Degree of curve = 1° ; Amount of super elevation = 7.5 cm; Length of transition curve = 145m.
7. (a) Write a note on geometric design of runway. [8+8]
(b) Explain the salient features for runway length system.
8. Write short notes on the following. [16]
 - i. Extra Widening
 - ii. Engineering surveys
 - iii. Lad repetition

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1. (a) Briefly discuss different road development plans. [8+8]
(b) Derive an expression for calculating the overtaking sight distance on a highway.
2. (a) Write a note on design of vertical alignment. [8+8]
(b) The speed of overtaking and overtaken vehicles are 90 Km/h and 40 Km/h respectively on a two way traffic road. If the time taken by the overtaking vehicle is equal to 7.5 seconds and reaction time of the driver is equal to 2.5 seconds, calculate the safe overtaking sight distance.
3. (a) What are the various types of traffic volume counts. Explain. [8+8]
(b) What are the various types of traffic accidents and explain the various measures to prevent accidents.
4. (a) What is a traffic rotary. What are its advantages and limitations? [8+8]
(b) Explain at grade intersections, the advantages and limitations.
5. (a) Write a detailed note on classification of sleepers in railways. [8+8]
(b) Derive an expression for finding the cant, when the train moves round the curve.
6. (a) Explain briefly different types of gradients in railways. [8+8]
(b) If a 8° curve track diverges from a main curve of 4° in an opposite direction in the layout of broad gauge yard, calculate the superelevation and the speed on the branch line, if the maximum speed permitted on the main line is 45 Km/h.
7. (a) Write a note on factors aircraft characteristics. [8+8]
(b) Draw wind rose diagram and explain the features.
8. Write short notes on the following. [16]
 - i. Classification of Roads
 - ii. Runway Lighting System
 - iii. Construction of cement concrete pavement

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1. (a) What are the factors affecting the road alignment? Discuss. [8+8]
(b) Derive an equation for finding the super elevation required at a horizontal curve.
2. (a) Explain the summit and valley curves. [8+8]
(b) The design speed of a highway is 80 Km/h. There is a horizontal curve of radius 180 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. (a) Enumerate the different methods of carrying out origin and destination studies.
(b) Write a note on design of transition curves. [8+8]
4. (a) Explain the design steps involved in Rotary intersection. [8+8]
(b) How are the traffic signal times decided based on Webster's Method.
5. (a) Write a note on grade compensation. [8+8]
(b) Write a note on speeds on curves in case of railways.
6. (a) Briefly explain the various types of Signals in railway engineering. [8+8]
(b) Write a note on crossings and Turn outs.
7. (a) Write a note on factors affecting the selection of site for runway. [8+8]
(b) Explain the salient features of wind rose diagram.
8. Write short notes on the following. [16]
 - i. Drawings and reports
 - ii. Runway lighting system
 - iii. Rail Fastenings

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1. (a) Briefly outline the highway development in India [8+8]
(b) Derive an expression for calculating the overtaking sight distance on a highway.
2. (a) Explain different types of gradients. [8+8]
(b) The speed of overtaking and overtaken vehicles are 100 Kmph and 50 Kmph respectively on a two way traffic road. If the time taken by the overtaking vehicle is equal to 7.5 seconds and reaction time of the driver is equal to 2.5 seconds, calculate the safe overtaking sight distance.
3. (a) Write a note on parking studies. [8+8]
(b) Write a note on road accidents and its preventive measures.
4. (a) Explain grade separated intersections, the advantages and limitations. [8+8]
(b) Write a note on traffic islands.
5. (a) What are the different types of ballast. [8+8]
(b) Write a note on rail fastenings.
6. (a) Explain briefly about rail fastenings. [8+8]
(b) Write a note on negative super elevation.
7. (a) Write a note on computation of runway length. [8+8]
(b) Write a note on orientation of runway.
8. Write short notes on the following. [16]
 - i. Equivalent Single Wheel Load
 - ii. Theory related to creep
 - iii. Drawing and reports