

--	--	--	--	--	--	--	--	--	--



INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

B.Tech VI Semester End Examinations (Regular) - May, 2019

Regulation: IARE – R16

TRANSPORTATION ENGINEERING

Time: 3 Hours

(CE)

Max Marks: 70

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the question must be answered in one place only

UNIT – I

1. (a) What are the significant recommendations of Jaykar committee report? Mention how did this help road development in India? [7M]
- (b) The area of a certain district in India is 18,400 sq.km and there are 16 towns as per 1981 census. Determine the lengths of different categories of roads to be provided in this district by the year 2001. [7M]
2. (a) Write in detail about the engineering surveys conducted for highway alignment. [7M]
- (b) Calculate the lengths of National and State highways required in a district with a total area of 7200 km², developed, Semi-developed & undeveloped areas being 30,45 & 25 percent of the respective district. The no of towns with population over 1.0, 0.5 - 1.0, 0.2 - 0.5 and 0.1 - 0.2 lakhs are 3, 7, 12 & 20 respectively in a district using second twenty year plan? [7M]

UNIT – II

3. (a) Explain different types of gradients that can be provided on highway alignment and deduce the relation $e + f = \frac{v^2}{2g}$. [7M]
- (b) Calculate stopping sight distance for a vehicle traveling with 90kmph assuming necessary data as per IRC. [7M]
4. (a) What are the various factors that affecting the highway geometric design? Describe the importance of geometric design. [7M]
- (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 80kmph. Assume other data. [7M]

UNIT – III

5. (a) List out the various factors cause accidents in traffic engineering and explain the engineering measures to reduce accidents [7M]
- (b) A vehicle moving at 40kmph speed was stopped by applying brake and length of the skid mark was 12.2 m. If average skid resistance of the pavement is known to be 0.70, determine the brake efficiency of the test vehicle. [7M]

6. (a) Explain different types of traffic signs with the help of neat sketches. [7M]
(b) Average normal flow of traffic on cross roads A and B during design period 400 and 200 PCU per hour. Saturation flow values on the roads are found to be 1250 and 1000 PCU per hour respectively. All red time required for pedestrian crossing is 12s. Design two phase crossing by Webster's method. [7M]

UNIT – IV

7. (a) Explain various types of at-grade intersections and explain them with neat sketches? [7M]
(b) What is channelization and explain the importance with its advantages and disadvantages? [7M]
8. (a) What are different types of conflicts that are possible at intersections? Explain how many conflict points are possible for a 4 road junction with all the roads being two way, by using a diagram. [7M]
(b) Explain the concept of traffic island in the design of intersections. Explain the design factors considered in rotary design and list the advantages and disadvantages in rotary intersection. [7M]

UNIT – V

9. (a) Write a short note on [7M]
i) Surface dressing
ii) Seal coat
iii) Interface treatment
(b) Write down the procedure for construction of water bound macadam roads in highway construction. [7M]
10. (a) What is the need for maintenance of highways and explain briefly the classification of maintenance works. [7M]
(b) Explain the construction of cement concrete roads? What are the general causes of pavement failures? [7M]

