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BT-6/M-20 **36152**

TRANSPORTATION ENGINEERING-I
Paper–CE-310 N

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *five* questions in all, selecting *one* question from each Unit. All questions carry equal marks.

UNIT–I

1. (a) Briefly explain the engineering survey needed for locating new highways. 8

(b) Discuss the importance of road transportation in the country. 7

2. (a) Discuss the factors controlling the highway pavement's alignment. 8

(b) Determine the length of different categories of roads in a state in India by the year 2001, using third road development formula and the following data :

Total area of state is 80,000 sq. km, total number of town as per 1981 census is 86. Overall road density = 82 km per 100 sq. km area.

UNIT–II

3. (a) The design speed of a road is 65 kmph, the friction coefficient is 0.36 and reaction time of driver is 2.5 sec. Calculate the value of

(i) Head light sight distance.

(ii) Intermediate sight distance required for the road. 8

(b) Write short notes on :

(i) Overtaking sight distance.

(ii) Camber. 7

4. (a) Name different types of curves used in highway designing. Explain any *one* in detail with suitability. 8

(b) Explain following terms in detail :

(i) Super elevation.

(ii) Pavement unevenness. 7

UNIT–III

5. (a) What are different vehicular characteristics which affect the road design ? Briefly explain. 8

(b) Explain the term traffic volume. What are the objects of carrying out traffic volume studies ? 7

6. (a) Classify the different types of traffic signs and mention the general objectives of each types of sign. 8

(b) Explain grade separated intersections with advantages and limitations. 7

UNIT–IV

7. List desirable properties of aggregates to be used in road construction. Also explain various tests conducted to determine the strength of aggregate for road construction. 15

8. (a) Bring out points of difference between :

(i) Bitumen and Tar.

(ii) Cutback and emulsion. 8

(b) What are the various tests carried out on bitumen ? Briefly mention the principle and uses of each test. 7