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53 (CE 502) TREN

2017

TRANSPORTATION ENGINEERING - I

Paper : CE 502

Full Marks : 100

Time : Three hours

The figures in the margin indicate full marks for the questions.

Answer ten questions out of eleven.

1. What is highway planning ? State and briefly explain the road classification as per Nagpur road classification. 3+7=10
2. With neat diagrams, explain the various road patterns used in planning. 10
3. Explain with suitable figures the different factors in controlling highway alignment. State the special consideration required for highway alignment in hilly areas. 7+3=10

Contd.

4. Draw the cross-section of a two lane highway and explain the different elements on it.

10

5. Explain the different factors affecting Stopping Sight Distance (SSD). What is PIEV theory?

7+3=10

6. Calculate the minimum sight distance required to avoid a head-on collision of two cars approaching from the opposite directions at 90 and 60 km/hr. Assume a reaction time of 2.5 seconds, coefficient of friction of 0.7 and a brake efficiency of 50% in both cases.

10

7. What is permanent way of a railway track? Explain the function of each component of railway track.

3+7=10

8. What is the difference between Flexible and Rigid Pavement? Explain the CBR method of pavement design.

5+5=10

9. Briefly explain the aggregate impact test used for testing materials in laboratory. State the desirable properties of aggregate used in road pavement.

5+5=10

10. What is transition curve? Design the length of a transition curve in a highway.

3+7=10

11. What are the purposes of providing extra widening of pavement in a highway? Explain the process of introducing superelevation in a horizontal curve.

4+6=10