

[Total No. of Questions - 9] [Total No. of Printed Pages - 3]
(2064)

14706

B. Tech 6th Semester Examination

Highway Engineering

CE-6004

Time : 3 Hours

Max. Marks : 100

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt five questions in all, selecting one question from each of the sections A, B, C and D and all the sub-parts of the questions in Section-E.

SECTION - A

1. (a) Write down the construction steps of Macadam's construction alongwith a typical cross-section. (10)
- (b) What are the various surveys to be carried out before planning a highway system for a given area? Explain briefly. (10)
2. (a) Compare the Nagpur road plan and the second twenty year road plan, discuss the merits of each. (10)
- (b) Explain how the road lengths of different categories for a state are determined for the year 2001, using the third road development plan concept. (10)

SECTION - B

3. (a) Write down the various factors affecting friction offered by pavement surface. (5)
- (b) Draw a typical cross-section of a divided highway in urban area indicating the width of pavement, roadway and land. (7)

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- (c) Derive an expression for finding the stopping sight distance of a vehicle at level. (8)
4. (a) Enumerate the various steps for practical design of super elevation. (10)
- (b) A vertical summit curve is formed when an ascending gradient of 1 in 25 meet another ascending gradient of 1 in 100. Find the length of the summit curve to provide the required stopping sight distance for a design speed of 80 kmph. (10)

SECTION - C

5. (a) Indicate how the spot speed data are presented and the results used in Traffic engineering? (10)
- (b) Explain various patterns of kerb parking with diagram. (10)
6. (a) Explain briefly the various design factor that are to be considered in rotary intersection design. (12)
- (b) What are the advantages and disadvantages of Traffic signals? (8)

SECTION - D

7. (a) What are the various tests for judging the suitability of road aggregates? Discuss the objectives, their advantages and limitations? (12)
- (b) Define the term 'Group Index' of soils. How it is obtained? (8)
8. (a) Discuss the desirable properties of bitumen. Compare tar and bitumen. (10)
- (b) Write down the desirable properties of bituminous mixer in brief. (10)

SECTION - E

9. Write short notes on the following:
- (a) CRRl.
 - (b) Obligatory points.
 - (c) Cross-slope.
 - (d) Overtaking zones.
 - (e) Three E's.
 - (f) Level of service.
 - (g) Grade Separated Intersections.
 - (h) Uses of rubber modified bitumen in bituminous mixer.
 - (i) Emulsions uses in road construction.
 - (j) Grade compensation on curves. (10×2=20)