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Name.....

Reg. No.....

FIFTH SEMESTER B.TECH. (ENGINEERING) [09 SCHEME] DEGREE EXAMINATION, NOVEMBER 2014

CE/PTCE 09 501—TRANSPORTATION ENGINEERING—I

Time : Three Hours Maximum : 70 Marks

Assume suitable data wherever necessary.

Part A

Answer **all** *questions.*
Each question carries 2 *marks.*

1. Draw typical cross-section of urban road in embankment.
2. List down the engineering surveys needed for highway location.
3. What do you understand by intermodal co-ordination ?
4. List down the failures in flexible pavements.
5. Sketch the detailed runway marking.

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*
Each question carries 5 *marks.*

1. Derive an expression for calculating stopping sight distance.
2. What are the objectives of providing extrawidening on horizontal curves ?
3. What are the uses of O-D studies ? Explain.
4. Compare various methods of economic analysis. Which one is commonly adopted in highway analysis ?
5. What are the various test to be done on road aggregates to judge their suitability for road construction ?
6. With neat sketch, explain various types of aircraft parking configuration.

(4 × 5 = 20 marks)

Part C

Answer **all** *questions.*
Each question carries 10 *marks.*

1. The speeds of overtaking and overtaken vehicles are 80 kph and 60 kph respectively on a two-way traffic road. If the acceleration of the overtaking vehicle is 0.80 m./s^2, calculate the safe overtaking sight distance. Sketch of the overtaking zone with location of sign posts.

Or

Turn over

[redacted]

2. What is the length of transition curve needed for a design speed of 100 kph and radius of circular curve of 320 m. Rate of change of superelevation is 0.66 % ?

3. (a) Explain the salient features of the various road development plan. India has taken up so far. (5 marks)

   (b) Explain different types of traffic signs with neat sketches. (5 marks)

Or

4. Explain the various road user characteristics to be considered in the design of roads.

5. Explain the desirable properties of bitumen. What are the recommended test for each of them ?

Or

6. A new member of a city council complained to the city manager that he has been spending too much on maintenance of paving and not enough for repaving. One case cited involved the expenditure for (a) Patching and repairing of Rs. 46,00,000 (46 lakhs) a year for the past 8 years on one street. The council man claimed that the street could have been (b) repaved for 8 years ago for Rs. 3,00,00,000 (300 lakhs). The city could have borrowed on a general bond issue for 8 years at 4.5 interest rate. Did the council man have a good case ?

7. The length of a runway at sea level, standard atmospheric conditions and zero gradient is 1500 m. The airport site is at elevation of 900 m., reference temperature is 20° C. If the proposed runway gradient permits an effective gradient of 0.2 %, determine the actual runway length required.

Or

8. (a) Briefly explain the various landing aids provided at an airport. (6 marks)

   (b) Discuss the various factors which affect the number of gate positions in an airport. (4 marks)

[4 × 10 = 40 marks]