QP Code : 29394

[3 Hours]   [Total Marks: 100]

(OLD COURSE)

N. B.   (1) Question No. **1** is **compulsory**.
      (2) Attempt any **four** questions from remaining **six** questions.
      (3) Assume appropriate data if **necessary** and **state** them **clearly**.
      (4) Draw neat sketches wherever required

1.   Solve any four : -   (4x5)   20
  (a) State the function fulfilled by transition curve.
  (b) What do you mean by scouring and how scour depth is determined?
  (c) Differentiate between highway pavement and Airport pavement.
  (d) Explain ESWL and the concept in the determination of the equivalent wheel load.
  (e) Write short note on PCU and VDF

2. (a) State the objectives of widening of pavement on horizontal curves? What are the   10
      factors on which the design of widening depends? Explain
  (b) Enlist different types of rigid pavement failures. Explain any two with neat sketches.   10

3. (a) Calculate the economic span. Also derive equation used stating assumption clearly.   10

Span (m)	4	8	12	15
Cost of girder (Rs)	1600	8000	14000	24000
Cost of one pier & foundation (Rs)	18000	20000	22000	28000

  (b) Define :-   10
       (i) Flakiness Index
       (ii) Elongation index
    And also state their importance.

4. (a) Calculate the maximum permissible speed on a horizontal curve of radius 125m of a   10
      highway designed for a speed of 65km/hr to carry mixed traffic if the super elevation is
      not to exceed the specifies value of IRC.
  (b) Explain with the aid of neat sketches the methods of eliminating camber and   10
      introduction of super elevation.

5. (a) What are the various test carried out on Bitumen. Explain all tests in brief.   10
  (b) Write short note on :-   10
       (i) 30th highest hourly volume.
       (ii) Types of bearings used in bridge

[TURNOVER

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6. (a) Explain in detail geotextile & geogrid in highway. 10

(b) The speeds of overtaking & overtaken vehicles are 70 & 40 kmph respectively on a two 10
way traffic road. If the acceleration of overtaking vehicle is $0.99 m/sec^2$
Calculate safe overtaking sight distance
(i) Mention the minimum length of overtaking zone.
(ii) Draw a neat sketch of the overtaking zone & show positions of sign posts.

7. Write short note on :- (4x5) 20
(i) Importance of highway maintenance
(ii) Rotary Island
(iii) Design steps for rigid pavement
(iv) Regulatory signs

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