

Total No. of Questions :10]

SEAT No. :

P3653

[4959]-1002

[Total No. of Pages :3

B.E. Civil

Transportation Engineering

(2012 Course) (Semester - I)

Time : 2.5 Hours

[Max. Marks :70]

Instructions to the candidates:

- 1) *Answer Q1 or Q2 Q3 or Q4 and Q5 or Q6 Q7 or Q8 Q9 or Q10.*
- 2) *Answer to the two sections should be written in separate books.*
- 3) *Figures to the right indicate full marks.*
- 4) *Use of logarithmic tables slide rule, Mollies charts, electronics pocket calculator and steam tables is allowed.*
- 5) *Assume suitable data if necessary.*
- 6) *Neat diagrams must be drawn wherever necessary.*

- Q1)** a) Explain how master plan is prepared and the road development plan is phased. [5]
- b) What are the various objectives of preliminary survey for highway alignment? State only the various steps in the conventional method. [5]

OR

- Q2)** a) Explain in brief the salient features of Third twenty year road development plan 1981-2001. [5]
- b) Calculate the absolute minimum and ruling minimum radius of horizontal curve for a design speed of 80 Kmph. [5]

- Q3)** a) Write a short note on condition and collision diagram. [5]
- b) Calculate the spacing of expansion joint from the following data: [5]

Maximum joint width =2 cm

Temperature of laying concrete =20°C

Maximum Slab Temperature expected =55°C

Coefficient of thermal expansion of Concrete =10 X 10⁻⁶ per °C

OR

P.T.O.

- Q4)** a) The radius of a horizontal curve is 400 m, the total pavement width at curve is 7.6m and the super elevation is 0.07. Design the Transition curve length for a speed of 100 kmph. Assume Pavement to be rotated about inner edge. **[5]**
- b) Explain the CBR method of pavement design. **[5]**

- Q5)** a) Explain in the brief the following: **[2+2+2=6]**
- 1) Aileron
 - 2) Rudder
 - 3) Elevator
- b) Explain the various surveys and data to be collected for airport site selection. **[4+2=6]**
- c) Give different systems of classification of airport. **[4]**

OR

- Q6)** a) What do you understand by the term airport capacity? What the factors which affect the airport capacity? **[2+4=6]**
- b) Explain the following terms: **[3x2=6]**
- 1) Apron.
 - 2) Air Speed.
 - 3) Runway.
- c) Write a short note on basic runway length. **[4]**

- Q7)** a) What is the importance of hydraulic data in bridge design. **[4]**
- b) Describe the methodology involved in the use of rational method for computation of maximum flood discharge from small catchments. **[6]**
- c) Explain afflux. List and explain the different formulae used for estimation of afflux. **[2+4=6]**

OR

- Q8)** a) Distinguish between alluvial and quasi-alluvial streams. [2+2=4]
- b) A bridge need to be constructed across an alluvial stream having a discharge of 500 cumecs. Calculate the depth of maximum scour when the bridge consists of: [3+3=6]
- 1) Three spans of 15 m each.
 - 2) Four spans of 30 m each.
- Take $f=1.10$.
- c) Discuss the direct method of design of flood discharge in detail. Draw sketches wherever necessary. [4+2=6]
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- Q9)** a) Define Abutment. State the various types of abutments. Also State the requirements of good Abutments. [2+2+2=6]
- b) Mention any ten loads to be considered in the design of bridge. Explain any one in brief [4+2=6]
- c) Write a short note on Erection and Maintenance of Bridges. [6]

OR

- Q10)**a) What are the causes of longitudinal forces in bridge? Explain in brief. [2+2+2=6]
- b) Define Bridge bearing. State the types of bearings? Why Bearings are necessary in bridges. [2+2+2=6]
- c) Explain the following with a neat sketches: [2+2+2=6]
- 1) Box Culvert.
 - 2) Swing bridge.
 - 3) Suspension bridge.

