Total No. of Questions :10]

SEAT No. :

P3653

[Total No. of Pages :3

[4959]-1002
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) AileronI
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]**

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.