

Total No. of Questions : 12]

SEAT No. :

P726

[Total No. of Pages :4

[4659] - 15

B.E. (Civil) (Semester - II)

TRANSPORTATION ENGINEERING - II

(2008 Pattern)

Time : 3 Hours]

[Max. Marks : 100

Instructions to the candidates :-

- 1) *Answer Q.1 or Q.2, Q.3 or Q.4, and Q.5 or Q.6 from Section - I Q.7 or Q.8, Q.9 or Q.10, and Q.11 or Q.12 from Section - II.*
- 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, Mollier charts, electronics pocket calculator and steam tables is allowed.*
- 5) *Assume suitable data, if necessary.*
- 6) *Neat diagrams must be drawn wherever necessary.*

SECTION - I

- Q1)** a) Explain the objects of highway planning [5]
- b) Write short notes on: [6]
- i) Various traffic studies.
 - ii) Types of traffic signal.
- c) Write down the major policies and objectives of the Lucknow Road plan.[6]

OR

- Q2)** a) Enlist the various road patterns with their suitability. [6]
- b) Write a short note on: [6]
- i) Preparation of master plan.
 - ii) Accident studies.
- c) What are various types of traffic islands used? Explain the uses of each.[5]

P.T.O.

- Q3)** a) What are the various requirements of an ideal highway alignment? discuss briefly. [6]
- b) Define camber? What are the objects of camber? Specify the recommended ranges of camber for different types of pavement surface. [6]
- c) Design the rate of super elevation for a horizontal highway curve of radius 500 m and speed 100 kmph. [5]

OR

- Q4)** a) What are the requirements of a good highway drainage system? [6]
- b) Write a short note on: [6]
- i) Grade compensation.
- ii) Widening of pavement on horizontal roads.
- c) A valley curve is formed by a descending grade of 1 in 25 meeting an ascending grade of 1 in 30. Design the length of valley curve to fulfill comfort condition for a design speed of 80 kmph. Assume allowable rate of change of centrifugal acceleration $C = 0.6\text{m/sec}^3$. [5]

- Q5)** a) Discuss the desirable properties of bitumen. Compare tar and bitumen. [6]
- b) Explain group index method of flexible pavement design. [6]
- c) What are the requirements of good joints in cement concrete pavement? [4]

OR

- Q6)** a) Explain briefly penetration test of Bitumen. [6]
- b) State the various factors affecting on the pavement design. [4]
- c) Discuss the advantages and limitation of CBR method of design. [6]

SECTION - II

- Q7)** a) Differentiate between: [2 × 3 = 6]
- i) Wind Rose Type I and Type II diagram.
 - ii) Minimum Turning Radius and Minimum Circling Radius.
- b) Draw a neat sketch showing the aeroplane component parts. [5]
- c) Describe the corrections to be applied to the calculated basic runway length to get the actual runway length. [6]

OR

- Q8)** a) Enlist the various Aircraft characteristics and explain any two in brief. [5]
- b) Enumerate the advantages and limitations of air transport. [6]
- c) Write a detailed note on zoning laws. [6]

- Q9)** a) How do you determine the flood discharge by direct method? [5]
- b) A bridge is proposed to be constructed across an alluvial stream carrying a discharge of 250 m³/sec. Assume Lacey's silt factor equal to 1.0. Find the maximum depth of scour when the bridge consists of 4 spans of 20 m each. [4]
- c) Write a brief note on wing walls. [4]
- d) Write a short note on requirement of traffic in the design of highway bridges. [4]

OR

- Q10)** a) Give the various classifications of bridges. [5]
- b) The normal velocity of flow in a river is 1.5 m/sec. The normal, artificial waterway and the enlarged area upstream of the bridge respectively are 8000 m², 7000 m² and 9000 m². Determine the height of afflux using Merriman's formula. Also find the increase in velocity due to afflux. Assume $g = 9.81 \text{ m/sec/sec}$ and Coefficient of discharge, $c = 0.98$. [4]
- c) Write short notes on any two of the following: [2 × 4 = 8]
- i) IRC class A type of loading.
 - ii) Circular Pier.
 - iii) Economical span of bridge.
 - iv) Scour depth.

- Q11)**a) Explain any two types of erection methods employed during construction of bridges. [4]
- b) Discuss the various types of culverts with respect to their suitability in the field. [4]
- c) Draw the illustrative sketches of. [4]
- i) Cable stayed bridge.
- ii) Bascule bridge.
- d) Write a note on maintenance of bridges. [4]

OR

- Q12)**a) State the purposes for providing bearings in bridge. [4]
- b) Explain in details; [4]
- i) Trestles.
- ii) Raft bridge.
- c) Draw the illustrative sketches of. [4]
- i) Pipe Culvert.
- ii) Expansion bearing.
- d) What do you mean by 'Floating bridge'? What are the advantages of floating bridge over fixed bridge? [4]

