Total No. of Questions : 12]

SEAT No. :

P1919

[Total No. of Pages : 3

[5254]-15

B.E. (Civil Engineering)

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 Q8, 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, Mollies 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 necessity of carrying out Fact Finding Surveys. **[6]**

b) Write a short note First Twenty Year Road Development Plan. **[4]**

c) Explain in brief the Following : **[3 + 3 = 6]**

i) Vehicular characteristics

ii) Parking Surveys

OR

Q2) a) State comparison between Nagpur road plan and Bombay road Plan. **[1 × 6 = 6]**

b) Define Alignment. State the requirements of an Ideal Alignment. **[1 + 3 = 4]**

c) Explain in brief the Following : **[3 + 3 = 6]**

i) Traffic signs

ii) Accident Studies

Q3) a) Define Stopping Sight Distance. Calculate SSD required by a car moving at a speed of 60 Kmph on a descending gradient of 1 in 20. Assume any other data suitably **[1 + 5 = 6]**

b) Draw a neat cross section of Urban road. **[4]**

c) Define Transition curve. Discuss in brief the necessity of providing Horizontal Transition Curves. **[1 + 5 = 6]**

P.T.O.

OR

Q4) a) What do you mean by Gradient? State various types of gradients. **[1 + 2 + 3 = 6]**

Also states the values of gradients recommended by IRC.

b) Write a note on Highway Drainage? **[4]**

c) Define Superelevation. Derive an equation $e + f = v^2/ gR$. State clearly the meaning of each term used. **[1 + 5 = 6]**

Q5) a) Define specific gravity. Discuss in brief determination of Specific Gravity by Density Basket Method. **[1 + 5 = 6]**

b) Explain in brief Ductility Test on Bitumen and its significance. **[1 × 6 = 6]**

c) Write a note on Transverse Joints in Cement Concrete Pavement. **[6]**

OR

Q6) a) State the various recommendations of IRC for design of flexible pavement by CBR method. **[1 × 6 = 6]**

b) State comparison between Flexible and Rigid pavement. **[1 × 6 = 6]**

c) State comparison between Tar and Bitumen. **[1 × 6 = 6]**

SECTION - II

Q7) a) Explain in brief the following : **[3 × 2 = 6]**

i) Turning Radius

ii) Ruder and Aileron

iii) Runway & Taxiway

b) Discuss types of survey to be carried out for site selection of an Airport? **[5]**

c) State the advantages and disadvantages of Air Transportation. **[5]**

OR

Q8) a) Give detail classification of Airports. **[5]**

b) Explain with the help of a sketch, three controls for Rolling, Pitching and Yawing Movements of a Aeroplane. **[2 × 3 = 6]**

c) How Runway orientation should be done? Discuss. **[5]**

Q9) a) A bridge needs to be constructed across an Alluvial stream having discharge of 500 Cumecs. Calculate the depth of maximum scour when the bridge consists of, Four spans of 40 m each **[6]**

Assume the value of silt factor = 1.1

b) What is meant by economical span ? Derive the condition for an economic span, stating clearly the assumptions made in the derivation. **[1 + 3 + 2 = 6]**

c) Write a short note on Afflux. **[4]**

OR

Q10) a) Define Bridge. State the various points to be considered while selecting an Ideal Bridge site location. **[1 + 3 = 4]**

b) Calculate the height of Afflux for the following hydraulic data : **[6]**

The normal velocity of flow in the river = 1.5 m/sec.

The normal waterway under the bridge = 8000 m^2

The artificial waterway under the bridge = 7000 m^2

The enlarged area upstream of the bridge = 10000 m^2

c) Explain the following terms : **[3 × 2 = 6]**

i) Vertical Lift Bridge

ii) Swing Bridge

iii) Suspension Bridges

Q11)a) Draw neat sketches of any three types of piers **[2 × 3 = 6]**

b) Define scour depth. Discuss in brief practical method of determination of scour depth **[2 + 4 = 6]**

c) Write a short note on : **[3 + 3 = 6]**

i) Maintenance of Bridges

ii) Cutwaters and Ease Waters

OR

Q12)a) How will you account for the following in the design of Highway Bridge **[3 × 2 = 6]**

i) Dead Load

ii) Temperature stresses

iii) Wind Load

b) Write a note on types of Wing walls **[6]**

c) What kind of maintenance is required for highway bridges? Also highlight the need of maintenance of old bridges **[3 + 3 = 6]**