

Total No. of Questions : 10]

SEAT No. :

P3016

[Total No. of Pages : 3

**[5354]-502**  
**B.E. (Civil)**  
**TRANSPORTATION ENGINEERING**  
**(2012 Pattern)**

*Time : 2½ Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:-*

- 1) *Answer Q.1 or Q.2, Q.3 or Q.4 and Q.5 or Q.6, Q.7 or Q.8, Q.9 or Q.10.*
- 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) Discuss briefly the contribution of Jaykar Committee in the development of roads of India. **[5]**
- b) State with reasons the various traffic studies necessary to be conducted for widening of existing roads. **[5]**

OR

- Q2)** a) Explain in brief on-street parking and off-street parking. **[5]**
- b) Explain in brief how the super elevation is provided in the field. **[5]**

- Q3)** a) Determine the extra widening required for a vehicle negotiating a curve of radius 300 m, moving with a design speed of 60 Kmph on a two lane road. Take length of wheel base is equal to 7.0 m. **[6]**
- b) Explain in brief Flash and Fire Test on Bitumen. **[4]**

OR

- Q4)** a) A vertical summit curve is formed at the intersection of two gradients, +4% and – 6%. Design the length of the summit curve to provide a stopping sight distance for a design speed of 80 Kmph. Assume any other data suitably. **[6]**

**P.T.O.**

- b) Write short notes on : [4]
- i) Cutbacks
  - ii) Camber

- Q5)** a) The length of the runway under standard conditions is 1200 m. The airport has an elevation of 250 m above mean sea level. Its reference temperature is 32° C. If the runway is to be constructed with an effective gradient of 0.20% Determine the corrected runway length. [10]
- b) Explain how orientation of runway is done using the Wind Rose Type I diagram. [6]

OR

- Q6)** a) Draw a neat sketch of an aircraft showing all the component parts. [6]
- b) Explain in brief the following: [2 × 3 = 6]
- i) Holding Apron
  - ii) Tricycle undercarriage
  - iii) Instrument runway
- c) What are the factors which influence the location of an airport. [4]

- Q7)** a) A bridge is proposed to be constructed across an alluvium stream carrying a discharge of 300 m<sup>3</sup>/s. Assume silt factor,  $f = 1.10$ , determine the maximum scour depth when the bridge consists of 5 spans of 20 m each. [6]
- b) What is Afflux? How it is estimated [5]
- c) Describe with the help of an illustrative sketch. [5]
- i) Splayed wing wall
  - ii) Column Bent pier

OR

- Q8)** a) The normal velocity of flow in a river is 2 m/s. The normal and artificial waterway under the bridge is 9000 m<sup>2</sup> and 7000 m<sup>2</sup> respectively. Determine the height of afflux using Molesworth formula. [5]
- b) Derive the equation for economical span of the bridge. [5]
- c) Write short notes on: [6]
- Forces due to water current
  - IRC class A Loading

- Q9)** a) From the following data, calculate the linear waterway required for a bridge to be constructed across the river. [6]

Catchment area = 1000 ha

Maximum intensity of rainfall = 1 cm/hr

Runoff coefficient = 0.6

Average depth of flow = 1.5 m

Permissible velocity of flow = 1.2 m/s

- b) Differentiate between temporary and permanent bridges with the help of an example. [6]
- c) Describe with the help of neat sketches: [3+3=6]
- Bascule Bridge
  - Pontoon Bridge

OR

- Q10)** a) Differentiate between Cable Stayed Bridge and Suspension Bridge. [3+3=6]
- b) State the purposes of providing bearing in bridges. Describe any one type of bearings. [4+2=6]
- c) Explain in brief the procedure for erection of Steel bridges. [6]

