

Total No. of Questions : 10]

SEAT No. :

**P3236**

[Total No. of Pages : 2

**[5670]-502**

**B.E. (Civil)**

**TRANSPORTATION ENGINEERING**

**(2015 Pattern) (Semester - I)**

*Time : 2½ Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

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

**Q1)** a) State comparison between Nagpur Road Plan and Bombay Road Plan. [5]

b) Write a note on road development plan vision 2021. [5]

OR

**Q2)** a) Define Terrain. What are the different terrains according to IRC:73? [5]

b) Explain in brief Origin and Destination Survey. [5]

**Q3)** Calculate safe Stopping Sight Distance for a design speed of 100 Kmph. Assume any other data suitably. [10]

OR

**Q4)** a) Why grade compensation is necessary for design of highway curves in hilly areas? What is the formula recommended by IRC. [6]

b) Define PCU. State the values recommended by the IRC for different types of vehicles on roads in rural area. [4]

**Q5)** a) Explain in brief the significance of conducting following test in highway construction [5]

i) Impact test.

ii) Penetration Test on bitumen.

**P.T.O.**

- b) Explain in brief the use of following materials in highway construction : [6]
- i) Cutback.
  - ii) Emulsion.
  - iii) PMB.
- c) Write a short note on Shape Test on Aggregates. [5]

OR

- Q6)** a) List out different tests conducted on road aggregates and also mention their importance. [5]
- b) Explain in brief the Ductility test on Paving bitumen. [6]
- c) State comparison between Tar and Bitumen? [5]

- Q7)** a) Briefly outline the advantages and limitations of flexible pavement. [6]
- b) The spacing between the contraction joints of Cement Concrete pavement is 4.2 m. Determine the tensile stress developed in the Cement Concrete pavement due to contraction if the coefficient of friction between the bottom of the pavement and the supporting layer is 1.1 and the unit weight of Concrete is 2400 Kg/m<sup>3</sup>. [6]
- c) What is Dowel Bar? Explain in brief objective of providing dowel bar in concrete pavement. [6]

OR

- Q8)** a) Explain in brief design guidelines for concrete pavements as per IRC 58-2015. [10]
- b) Describe any four factors governing the design of Rigid pavements. [8]

- Q9)** a) Explain in brief construction procedure of GSB. [6]
- b) Write a note on Joints in Rigid Pavement. [5]
- c) Describe the construction procedure of WBM pavements. [5]

OR

- Q10)** a) Draw a typical cross section of Concrete pavement and show the various layers. Also state the functions of each component. [6]
- b) Explain in brief Cold Mix Asphalt technology. [5]
- c) Write a note on Falling Weight Deflectometer. [5]

