



50285



12. a) Calculate the safe OSD for a design speed of 90 Kmph. Take reaction time of driver as 2.5 seconds and acceleration of overtaking vehicle as 2.5 kmph/sec. Draw OSD zone.

(OR)

- b) Calculate the length of the transition curve with the following data  
Design Speed = 70 Kmph, Radius of circular curve = 250m  
Allowable rate of introduction of super elevation = 1 in 150.  
Pavement width including extrawidth = 7.5m.

13. a) Explain any two methods of flexible pavement design.

(OR)

- b) Calculate the stresses at interior, edge and corner region of cement concrete pavement using Westergaard's equation. Use the following data.

Wheel Load = 5200 kg

Pavement Thickness = 20cm

Poisson's ratio of concrete = 0.15

Subgrade Modulus =  $6\text{kg/cm}^3$

Young's Modulus of cement concrete =  $3 \times 10^5 \text{ kg/cm}^2$

Radius of contact area = 15cm

14. a) Explain any two tests on road aggregates.

(OR)

- b) Explain any two tests on bitumen.

15. a) Discuss briefly the different types of failures of rigid pavements.

(OR)

- b) Evaluate any three non destructive testing methods of pavement deflection.

PART - C

(1×15=15 Marks)

16. a) A cement concrete pavement has a thickness of 18 cm and has two lanes of 7.2m with a longitudinal joint along the centre. Design the dimension and spacing of tie bar using the following details.

Allowable working stress in tension =  $1400 \text{ kg/cm}^2$

Unit weight of concrete =  $2400 \text{ kg/m}^3$

Coefficient of friction = 1.5

Allowable bending stress in deformed bars in concrete =  $2.5 \text{ kg/cm}^2$ .

(OR)

- b) Explain the application of geotextiles and geomembrane in road construction.