



G 1667

(Pages : 2)

Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, MAY 2015

Eighth Semester

Branch : Civil Engineering

CE 010 804 L 05—HIGHWAY AND AIRFIELD PAVEMENTS (Elective III) (CE)

(New Scheme—2010 Admission onwards)

[Regular/Supplementary]

Time : Three Hours

Maximum : 100 Marks

Part A

*Answer all questions.
Each question carries 3 marks.*

1. Define elastic moduli.
2. List the flexible pavements.
3. Which factors show in radius of relative stiffness ?
4. Which one is the important process in functional stress ?
5. Describe about the environmental influence.

(5 × 3 = 15 marks)

Part B

*Answer all questions.
Each question carries 5 marks.*

6. Draw the main function and diagram of climatic variations.
7. Which statements support the burmister's layer theory ?
8. Summarize the critical load position.
9. Explain the wrapping stress.
10. Describe briefly about the pavement instrumentation.

(5 × 5 = 25 marks)

Turn over



Part C

*Answer all questions.
Each question carries 12 marks.*

11. Draw and explain the stress distribution in pavements with suitable diagram.

Or

12. Give a description about the flexible and rigid pavements.
13. Discuss in detail about the CBR method.

Or

14. Design the pavement by GI method for the anticipated traffic volume of over 300 commercial vehicles per day. Given LL= 50%, PL =30% and soil portion passing 0.076 mm sieve = 70%.
15. Write in detail about bradley's stress coefficient.

Or

16. Calculate the stress at interior, edge and corner of a CC pavement by Westergaard's equation. Wheel load = 5200 kg, E of concrete 3×10^5 kg/cm². Thickness of pavement 30cm, Poisson's ratio of concrete is 0.15, Modulus of subgrade reaction 2.5kg/cm³, Radius of contact area = 30cm.
17. Design size and spacing of dowel bars at an expansion joint of concrete pavement of thickness 25 cm. Given the radius of relative stiffness of 80 cm. design wheel load 5000 kg. Load capacity of the dowel system is 40 percent of design wheel load. Joint width is 2.0 cm and the permissible stress in shear, bending and bearing stress in dowel bars are 1000, 1400 and 100 kg/cm² respectively.

Or

18. Design size and spacing of dowel bars at an expansion joint of concrete pavement of thickness 20 cm. Given the radius of relative stiffness of 90 cm. design wheel load 4000 kg. Load capacity of the dowel system is 40 percent of design wheel load. Joint width is 3.0 cm and the permissible stress in shear, bending and bearing stress in dowel bars are 1000, 1500 and 100 kg/cm² respectively.
19. Design the length and spacing of tie bars given that the pavement thickness is 20 cm and width of the road is 7 m with one longitudinal joint. The unit weight of concrete is 2400kg/cm², the coefficient of friction is 1.5, allowable working tensile stress in steel is 1750 kg/cm², and bond stress of deformed bars is 24.6 kg/cm².

Or

20. A cement concrete pavement of thickness 18 cm, has two lanes of 7.2 m with a joint. $S_a = 1700$ kg/cm² $W = 2400$ kg/cm² $f = 1.5$. Design the tie bars $S_b = 24.6$ kg/cm².

(5 × 12 = 60 marks)