Roll No. | | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 18

B.Tech. (CE) (2012 to 2017) (Sem.–7)

PAVEMENT DESIGN

Subject Code : BTCE-818

M.Code : 71877

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

Answer briefly :

1. Define Superpave.
2. What are the disadvantages of CBR method?
3. How is pavement thickness calculated by Triaxial test method?
4. Explain Inter Locking Concrete Block Pavement.
5. Explain modulus of subgrade reaction.
6. What are the critical stress combinations in concrete pavements during summer and winter?
7. What are the functions of base courses in flexible and rigid pavements?
8. Describe various critical load positions in slab.
9. What are the steps involved in overlay design for flexible pavements?
10. What do you mean by perpetual pavement?

SECTION-B

11. Discuss Westergaard's concept of temperature stresses in concrete pavements.

12. In CBR method of design, sometimes the origin of the penetration curve is shifted. Explain, why?

13. Calculate the stresses at interior, edge and corner of a cement concrete pavement by Westergaard's stress equation. Given, Modulus of elasticity of concrete = 3×10^5 kg/cm^2, Poisson's ratio of concrete = 0.15, thickness of concrete pavement = 18cm, Modulus of subgrade reaction = 8.5kg/cm^2, Wheel load = 5100kg, Radius of loaded area = 15cm.

14. Explain bituminous pavement with cemented base.

15. What are the various wheel load factors to be considered in pavement design? Explain each in detail.

SECTION-C

16. Explain briefly the Marshall method of Rituminous Mix design.

17. Describe step by step procedure for designing a Rigid Pavement with IRC method.

18. a) Explain the design considerations for spacing of (a) Expansion joints (b) contraction joints with and without reinforcement.

    b) Find the spacing between contraction joints for a 3.5m slab width having a thickness of 22cm for (a) Plain concrete slab (b) RCC slab.

    The allowable tensile stress value in concrete and steel are 0.8 and 1400 kg/m^2, coeff of friction is 1.5.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.