Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 50503

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2024.

Fifth/Sixth Semester

Civil Engineering

CE 3030 – PAVEMENT ENGINEERING

(Regulations 2021)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define -Modified binders in pavements.
2. Mention the two common types of pavements.
3. List the basic ingredients of a flexible pavement.
4. What are flexible pavements?
5. Differentiate between concrete roads and bitumen roads.
6. Write the types of stresses induced in rigid pavements.
7. How to provide skid resistance in pavements?
8. What is pavement evaluation?
9. Define - Super pave concept.
10. What are stabilizers?

PART B — (5 × 13 = 65 marks)

11. (a) Explain the following :

    (i) Modulus of subgrade reaction (7)

    (ii) Radius of relative stiffness (6)

Or

(b) Explain the salient characteristics of various types of pavements.

12. (a) Compare the merits and demerits of Group index method and California bearing ratio method of designing flexible pavements.

Or

(b) Explain the following methods of designing flexible pavements.

(i) Tri-axial test method (7)

(ii) Burmister method (6)

13. (a) Explain the factors influencing cement concrete pavements and their scope in India.

Or

(b) Calculate the stresses at interior, edge and corner regions of a rigid pavement using Westergaard's method. Take P = 4500 kg; E = 3×10^5 kg/cm^2, h = 30 cm, $\mu = 0.15$, k = 4.0 kg/cm^2 and, a = 15 cm.

14. (a) Explain the method of road surface evaluation of pavements based on various factors.

Or

(b) Explain the following :

(i) Structural evaluation in pavements (8)

(ii) Pavement serviceability index (5)

15. (a) Explain the applications of Geosynthetics in roads, in detail.

Or

(b) Describe the applications of various types of stabilizers in pavements.

PART C — ($1 \times 15 = 15$ marks)

16. (a) Discuss the steps involved in the analysis of rigid pavements using Westergaard's analysis.

Or

(b) Explain the role of various smart materials in the construction of cement concrete pavement.

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