

B.E DEGREE EXAMINATIONS: JUNE/JULY 2013

Seventh Semester

CIVIL ENGINEERING

CEE207: Pavement Engineering

Time: Three Hours**Maximum Marks: 100****Answer all the Questions:-****PART A (10 x 1 = 10 Marks)**

- Thickness of a pavement may be reduced considerably by
 - Compaction of soil
 - Stabilization of soil
 - Drainage of soil
 - Combination of all the above.
- As per recommendations of I.R.C., traffic volume study is carried out for rural roads for 7 days continuously during
 - Harvesting
 - Lean season
 - Harvesting and lean season
 - None of these.
- The formula for calculating the depth of concrete pavements suggested by Goldbeck, is
 - $d = \frac{3W}{\sigma_{\max}}$
 - $d = \sqrt{\frac{3W}{\sigma_{\max}}}$
 - $d = \sqrt{\frac{2W}{\sigma_{\max}}}$
 - $d = \sqrt{\frac{1.5W}{\sigma_{\max}}}$
- The road foundation for modern highways construction, was developed by
 - Tresguet
 - Telford
 - Telford and Macadam simultaneously.
 - Macadam
- In water bound macadam roads, binding material, is
 - Sand
 - Stone dust
 - Cement
 - Brick dust.
- Design of flexible pavements is based on
 - Mathematical analysis
 - Empirical formulae
 - A compromise of pure theory and pure empirical formula
 - None of these
- The basic formula for determination of pavement thickness was first suggested by
 - Spanglar
 - Picket
 - Kelly
 - Gold beck
- On the recommendations of Indian Road Congress, the ruling gradient in plains, is

23. a) Calculate the stresses at interior, edge and corner regions of a cement concrete pavement using Westergaard's. Use the following data:

1. Wheel load, $P = 5100 \text{ kg}$.
2. Modulus of Elasticity of cement concrete, $E = 3 \times 10^5 \text{ kg/cm}^2$.
3. Pavement thickness, $h = 18 \text{ cm}$.
4. Poisson's ratio of concrete = 0.15.
5. Modulus of subgrade reaction, $K = 6 \text{ kg/m}^3$.
6. Radius of contact area, $a = 15 \text{ cm}$.

(OR)

b) What are the various types of joints? Explain with neat sketches.

24. a) (i) What are the various types of failures in flexible pavement? Explain the causes. (7)

(ii) Write a descriptive note on pavement evaluation. (7)

(OR)

b) Explain the patch repair works in:

- i. WBM pavement
- ii. Bituminous pavement
- iii. Bituminous pavement during monsoons (when the pavement is wet)

25. a) What are the different soil stabilization techniques? Explain in detail.

(OR)

b) What is geosynthetics? Describe the application procedure and advantages of in pavement design.
