C 30076 (Pages : 2) Name.....

Reg. No.....

SEVENTH SEMESTER B.TECH. (ENGINEERING) [2014 SCHEME] DEGREE EXAMINATION, NOVEMBER 2017

Civil Engineering

CE 14 704 (C)—HIGHWAY PAVEMENT DESIGN

Time : Three Hours Maximum : 100 Marks

Use of IRC Codes and Burmister's chart are permitted.

Part A

Answer any **eight** *questions.*
Each question carries 5 *marks.*

1. Distinguish between highway and airport pavements.
2. Explain the applications and limitations of subgrade soil strength.
3. Brief on equivalent single wheel load.
4. How climatic condition affects the pavement design and performance ?
5. Design flexible pavement, given R value of subgrade soil = 32, Traffic index = 11.5, C value of WBM base course = 20 and C value of 7.5 cm. thick bituminous surfacing = 65.
6. What are the considerations for design of rigid pavements ?
7. Mention the functions of joints in cement concrete pavements.
8. As cement concrete pavement has a thickness of 25 cm. and has two lanes of 7.5 m. with a longitudinal joint along the centre. Design the dimensions and spacing of tie bars. Assume suitable data.
9. Write a descriptive note on pavement evaluation.
10. List the problems of highway rehabilitation.

(8 × 5 = 40 marks)

Part B

Answer **all** *questions.*
Each question carries 15 *marks.*

11. What are the factors affecting design and performance of pavements ? Explain in detail.

Or

12. Explain the design procedure of bituminous mixes by Marshall method.

Turn over

13. Discuss the design procedure of the flexible pavements by CBR method.

Or

14. Plate bearing test conducted with 30 cm. diameter plate on a sub-grade sustained a load of 1500 kg. at 0.25 cm. deflection. The test when carried out on a base course of thickness 18 cm. sustained a load of 5500 kg. at 0.25 cm. deflection. Design the pavement section for a wheel load of 5500 kg. with tyre pressure of 7.5 kg./cm^2 using Burmister's approach.

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

Or

16. Design the cement concrete pavement thickness, expansion and contraction joint spacing, dowel and tie bars for a wheel load of 5100 kg. Assume all suitable data.

17. Explain the principles and uses of Benkelman Beam test.

Or

18. Mention the types of defects in flexible pavement. Explain the causes and remedial measures.

(4 × 15 = 60 marks)