

Roll No .....

**CE-7004 (1) (CBGS)****B.E. VII Semester**

Examination, November 2019

**Choice Based Grading System (CBGS)****Pavement Design***Time : Three Hours**Maximum Marks : 70***Note:** i) Attempt any five questions.

ii) All questions carry equal marks.

iii) Assume missing data suitably if required.

1. a) Calculate ESWC of a dual wheel assembly carrying 2044 kg each for trial pavement thickness values of 150, 200 and 250 mm centre to centre spacing between the two tyres = 270 mm and clear gap between the walls of the tyres = 110 mm. 7
- b) Explain various factors affecting the design of flexible pavement. 7
2. a) Discuss different component of a cross-section of flexible pavement with neat diagram. 7
- b) Write a short note on the stress distribution through various layer in flexible pavement. 7
3. Explain the plate bearing test procedure for calculation of the modulus of subgrade reaction (K) and how are the correction for the subgrade modulus, K made for a different plate size and for accounting for worst moisture conditions. 14

4. a) What are the factors causing warping stresses in rigid pavements? 7
- b) What are the factors affecting temperature differential in rigid pavements? 7
5. What are the function of dowel bars? Explain its design steps. 14
6. a) Mention the causes of distress in flexible pavements. 7
- b) Explain present serviceability index. 7
7. Design the CC pavement thickness expansion and contraction joint spacing for a wheel load of 5200 kg. Assume all data suitably. 14
8. a) Compute the radius of relative stiffness of 20 cm thick CC slab using the following data: 7  
 Modulus of elasticity of CC =  $2.1 \times 10^5$  kg/cm<sup>2</sup>  
 Poisson's ratio for concrete = 0.15  
 Modulus of subgrade reaction 'k' = (i) 3.2 kg/cm<sup>3</sup>  
 (ii) 7.0 kg/cm<sup>3</sup>
- b) Discuss the advantages and limitations of CBR method of design. 7

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