

No. of Printed Pages : 05

Roll No. ....

**18BB1701**

**M. Tech. EXAMINATION, 2020**

(Second Semester)

(C Scheme) (Re-appear)

CE(HSE)

CEH502C

PAVEMENT DESIGN

*Time : 2½ Hours]*

*[Maximum Marks : 75*

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Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

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**Note :** Attempt *Four* questions in all. All questions carry equal marks.

**(5)M-18BB1701**

**1**

1. (a) Explain “Flexible and Rigid” Pavements.  
(b) Briefly explain the graphical method determination of ESWL.  
(c) What are the various factors affecting the design of flexible pavements ?
2. (a) Enumerate the functions and importance of each component of the rigid pavement.  
(b) Bring out the points of difference between Rigid and Flexible pavements.  
(c) Compute the equivalent radius of resisting section 20 cm thick slab, given that the radius of contact area wheel load is 15 cm.
3. (a) What do you understand by CBR Test. Enumerate the procedure to be done while conducting CBR test in the laboratory.  
(b) Discuss the advantages and limitations of CBR method of design.

4. (a) What do you understand by wheel load and contact pressure ?
- (b) Explain briefly the principle of Burmister's two-layer theory.
- (c) Mention the advantages of two layer theory over the elastic single layer theory for the analysis of flexible pavements.
5. (a) Discuss the concept of pressure distribution through granular layers.
- (b) What are the Empirical and Semi-Empirical design approach of flexible pavement design ?
6. (a) Design a new flexible pavement for a 2 lane undivided carriage way using following data :
- CBR value = 8%, initial traffic on completion of construction = 1800 CVPD, growth rate = 6%, VDF = 2.5, design life = 15 years.

- (b) Explain importance and procedure of Group Index method test conducted on subgrade.
7. (a) What are the steps for thickness design of rigid pavement as per IRC guidelines ?
- (b) Explain stresses in rigid pavements. What are the factors causing warping stresses in pavements ?
8. (a) Compute the radius of relative stiffness of 15 cm thick cement concrete slab using the following data :
- Modulus of elasticity of CC =  $2.1 \times 10^5$  kg/cm<sup>2</sup>, Poisson's ratio of concrete = 0.15, Modulus of subgrade reaction, K = 3.0 kg/cm<sup>3</sup>.
- (b) What are the objectives of providing contraction joints in CC pavement ? Mention the factors to be considered.

9. (a) Plastic Limit.
- (b) Length of tie bar
- (c) Frost action
- (d) Characteristic deflection in BBD
- (e) Radius of relative stiffness
- (f) Interior Loading