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Total No. of Pages : 02

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# B.Tech.(CE) (2011 Onwards E-I & II) (Sem.–7,8) PAVEMENT DESIGN Subject Code : BTCE-818

M.Code: 71877

## Time: 3 Hrs.

Max. Marks : 60

#### INSTRUCTIONS TO CANDIDATES :

- 1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
- 2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
- 3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.
- 4. Use of IRC:37-2012 and IRC:58-2011 is allowed.

#### **SECTION-A**

#### 1. Answer briefly :

- a) Explain Westergaard's analysis.
- b) What are the various functions of payement components?
- c) Define Superpave.
- d) Give limitations of Group Index method of pavement design.
- e) Define Radius of relative stiffness.
- f) What do you mean by equivalent C-value in Haveem Stabilometer method for design of flexible pavements?
- g) Explain Inter Locking Concrete Block Pavement.
- h) What do you mean by warping stresses?
- i) What are the various factors on which frost action depends upon?
- j) What do you mean by Ultra thin White topping?



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### **SECTION-B**

- 2. Briefly outline the IRC recommendations for determining the :
  - a) Thickness of slab
  - b) Spacing of joints.
- 3. Differentiate between Flexible pavement and Rigid pavement.
- 4. A sub grade soil has following properties, Soil passing 0.075mm sieve= 60%, LL=55%, PL=45%. Design pavement section by GI method for heavy traffic with 400 commercial vehicles per day.
- 5. What are the various wheel load factors to be considered in pavement design? Explain each in detail.
- 6. How is the thickness of flexible overlay on flexible pavement determined?

# SECTION-C

- 7. Describe step by step procedure for designing a Flexible Pavement with IRC method.
- 8. Explain briefly the Marshall method of Bituminous Mix design.
- 9. Design the reinforcement for a 12cm thick, simply supported RCC pavement. The contraction joints are spaced at 12m intervals. The pavement width is 7.5m, comprising of two lanes. Allowable stress for steel is  $3000 \text{kg/cm}^2$ . Take f = 1.5.

# NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.