

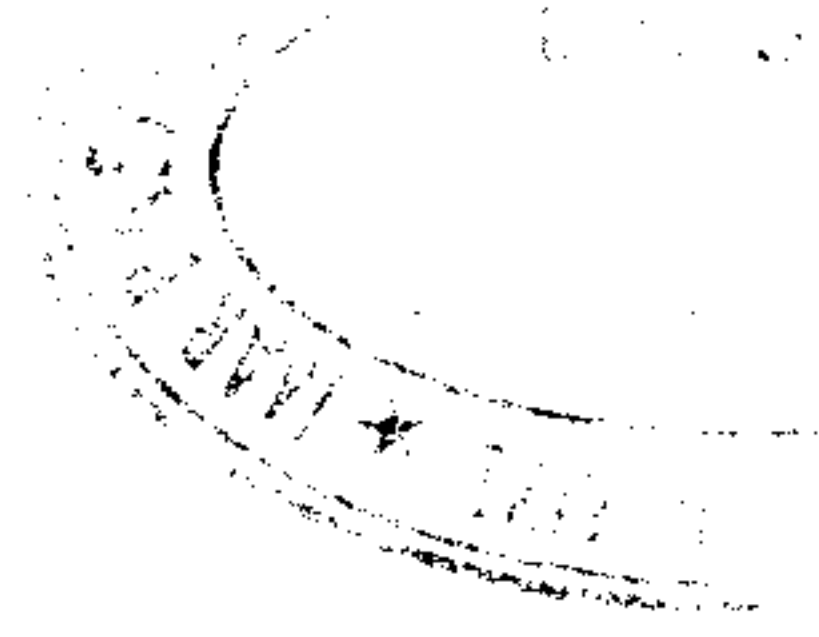


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**B – 2531**

Reg. No. : .....

Name : .....



**Eighth Semester B.Tech. Degree Examination, December 2016  
(2008 Scheme)**

**08.806.3 : Elective – IV : DESIGN AND CONSTRUCTION OF PAVEMENTS (C)**

Time : 3 Hours

Max. Marks : 100

**Instructions:** Answer *all* questions from Part **A** and *one full* question from *each* Module of Part **B**.

**PART – A**

- I. a) What is the basic difference between airport and highway pavements ?
- b) Explain ESWL and concept in the determination of the equivalent wheel load.
- c) Explain (i) prime coat (ii) tack coat (iii) seal coat.
- d) What are the considerations for the design of rigid pavements ?
- e) Explain how the dimensions and spacing of dowel bars are designed.
- f) Briefly explain LCN system of pavement design.
- g) What are the requirements of a good highway drainage system ?
- h) Explain the significance of premix carpet. **(5×8=40 Marks)**

**PART – B**

**Each** question carries **20** marks.

**Module – I**

- II. a) Explain how climatic variation affects pavement design and performance.
- b) Discuss the importance of gross wheel load and contact pressure in distribution pattern and in pavement design. **20**

OR

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- III. a) Explain the IRC method of design of pavement. What are its limitations ?
- b) The plate bearing tests were conducted with 30 cm diameter on soil subgrade and over 22 cm base course. The pressure yielded at 0.5 cm deflection are  $1.5 \text{ kg/cm}^2$  and  $5 \text{ kg/cm}^2$  respectively. Design the pavement section for 4300 kg wheel load with tyre pressure  $5 \text{ kg/cm}^2$  for an allowable deflection of 0.5 cm using Burmister's approach. 20

### Module - II

- IV. a) State the assumptions made by Westergaard's stress equations for rigid pavements.
- b) Compute the stress under following conditions :
- Wheel load = 42 kN.  $K = 28 \text{ N/cm}^2$ .
- Pavement thickness 220 mm. Radius of contact area =  $15 \text{ cm}^2$ .
- Poisson's ratio = 0.15. 20

OR

- V. a) Design the cement concrete pavement thickness, expansion and contraction joint spacing and size of dowel bars for a wheel load of 42 KN. Assume all data suitably.
- b) Discuss some of the important methods used for the design of rigid airport pavement. Discuss with sketches the various joints employed in cement concrete pavement. 20

### Module - III

- VI. a) Why is an overlay necessary over an existing pavement ? Name the various overlays over rigid and flexible pavements.
- b) What are the various types of bituminous construction in use ? Discuss the advantages and limitations of each. 20

OR

- VII. a) Explain with sketches how the surface drainage system is provided to lower the water table and control seepage flow.
- b) Indicate how the material (filter) is designed for use in sub-surface drainage system. 20

