



Reg. No. :

Name :

**Eighth Semester B.Tech. Degree Examination, November 2015
(2008 Scheme)**

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

Time : 3 Hours

Max. Marks : 100

Instructions : 1) Answer **all** questions from Part – A and **one** full question from **each** Module in Part – B.
2) Assume suitable data if **necessary**.

PART – A

- I. a) What are composite pavements ? How is it differ from conventional Flexible and Rigid pavements ?
b) Why and how prime coat and tact coat is applying to construction of pavements ?
c) Compare Highway and Airport pavements.
d) Discuss group index method for design of flexible pavements.
e) Explain the Westergaards stress equation for wheel loads for typical locations.
f) Discuss the necessity and requirements of joints in rigid pavements.
g) Explain the combination of stresses in cement concrete pavements.
h) Explain the controls for seepage flow and capillary rise for highway drainage.

(5×8=40 Marks)

PART – B

Module – I



- II. a) Explain the term Equivalent Single Wheel Load.
b) Plate bearing tests were conducted with 30 cm plate diameter on soil subgrade and over 15 cm base course. The pressure yielded at 0.5 cm deflection are 1.25 kg/cm² and 4.0 kg/cm² respectively. Design the pavement section for 4100 kg wheel load with tyre pressure of 5 kg/cm² for an allowable deflection of 0.5 cm using Burmister approach.

20

OR

- c) Explain the procedure of overlay design using Benkelman Beam.
d) Discuss in detail the AASHTO flexible pavement design method.

20

P.T.O.

**Module – II**

- III. a) Explain in detail Westergaard's concept for temperature stresses.
- b) Design the spacing and size of dowel bars at the expansion joints of a cement concrete pavement of thickness 25 cm with radius of relative stiffness 80 cm, for a design wheel load of 5000 kg. Assume load capacity of the dowel system as 40% of the design wheel load. Joint width is 2.0 cm, permissible shear and flexural stresses in dowel bar are 1000 and 1400 kg/cm² respectively and permissible bearing stress in CC is 100 kg/cm². 20

OR

- c) Explain the requirements of airport pavements and design methodology adopted.
- d) Calculate the stresses at interior, edge and corner of a cement concrete pavement. Modulus of elasticity of concrete 3.0×10^5 kg/cm², Poissons ratio of concrete = 0.15, Thickness of concrete pavement = 18 cm, Modulus of subgrade reaction = 8.5 kg/cm², Wheel load = 5100 kg and Radius of loaded area = 15 cm. 20

Module – III

- IV. a) Explain the construction procedure for Wet Mix Macadam with specifications.
- b) Explain the hydrology and hydraulic analysis for the design of surface drainage system. 20
- OR
- c) Explain the functional and structural evaluation of pavements.
- d) Discuss the various distresses in flexible pavements with help of sketches. 20

