

R13

Code No: 5122Q

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**M. Tech II Semester Examinations, February - 2017****PAVEMENT ANALYSIS AND DESIGN****(Transportation Engineering)****Time: 3 Hours****Max. Marks: 60****Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 20 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit.

Each question carries 8 marks and may have a, b, c as sub questions.

PART - A**5 × 4 Marks = 20**

- 1.a) Briefly outline the advantages and limitations of flexible pavements. [4]
- b) Explain the concept of "layer system". [4]
- c) What are the assumptions in Westergaard's Theory? [4]
- d) Explain briefly present serviceability index (PSI). [4]
- e) What are the design principle involved in Dowel bars? [4]

PART - B**5 × 8 Marks = 40**

- 2) What are the different types of pavements? Explain each of them in detail. [8]

OR

- 3.a) Explain the function of "base course" in Flexible pavements.
- b) Explain the function of "soil subgrade" in Flexible pavements. [4+4]

- 4) Explain briefly the principle of Burmister's two layer theory and mention its advantages over the elastic single layer theory for the analysis of flexible pavements. [8]

OR

5. Determine the total thickness of flexible pavement assuming single layer elastic theory using the following data:

Design wheel load	: 5100 kg	[8]
Tyre Pressure	: 7 kg/cm ²	
Elastic Modulus	: 180 kg/cm ²	
Permissible Deflection:	0.25 cm.	

6. What are the different types of stresses in rigid pavements and explain them in detail? [8]

OR

7. Compute the radius of relative stiffness of 15 cm thick cement concrete slab using following data:

Modulus of Elasticity of Cement Concrete	:	2.1 × 10 ⁵ kg/cm ²	
Poisson's Ratio for concrete	:	0.15	
Modulus of Subgrade reaction	(a)	3.5 kg/cm ³	
	(b)	6 kg/cm ³	[8]

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8. What are the different approaches and methods of flexible pavement design? [8]

OR

9. Explain the objectives and factors associated with AASHTO flexible pavement design method. [8]

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10. Explain the design of rigid pavement as per IRC guidelines. [8]

OR

11. How do you design tie bars at longitudinal joints? Explain. [8]

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