

Code No: 138DZ**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****B. Tech IV Year II Semester Examinations, July - 2021****PAVEMENT DESIGN****(Civil Engineering)****Time: 3 hours****Max. Marks: 75****Answer any Five Questions
All Questions Carry Equal Marks**

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- 1.a) Explain the differences between flexible and rigid pavements.
b) Explain ESWL and the concept of determination of Equivalent wheel load. [6+9]
- 2.a) Discuss the factors responsible for the design of flexible pavements.
b) Explain following stresses induced in the rigid pavements.
i) Temperature ii) Warping iii) Frictional [6+9]
- 3.a) Explain visco-elastic theory with a neat sketch.
b) Explain the fundamental difference between a linear and non-linear, viscous and non-viscous material response in pavement design. [7+8]
- 4.a) Discuss the assumptions of two-layer system originally developed by Burmister.
b) What is a 3-layer system? Explain. [6+9]
- 5.a) List out various methods of stabilization of soil and discuss why soil is stabilized.
b) Write a short note on:
i) Geo-synthetics ii) Geo-textiles
iii) Geo-grid iv) Geo-membranes. [7+8]
6. Design a bituminous pavement with granular base and sub-base layers using the following data:
a) Four lane divided carriage way
b) Initial traffic in the year of completion of construction = 5000 cvpd (two-way)
c) Traffic growth per annum = 6%
d) Design life period = 20 years
e) Vehicle damage factor = 5.2
f) Effective CBR of subgrade = 7%
Marshall mix design carried out on the bituminous mix to be used in the bottom bituminous layer (DBM) for a void content of 3% resulted in effective bitumen content (by volume) of 11.5%. [15]
- 7.a) Explain in detail about the design of dowel bars.
b) What are the advantages and disadvantages of continuously reinforced cement concrete pavements? [9+6]
- 8.a) What are the different types of rural roads?
b) Write the procedure for the design of a low volume road in CBR method. [5+10]