Code No: C8704 **R09**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.TECH I SEMESTER EXAMINATIONS, APRIL/MAY-2012
PAVEMENT ANALYSIS AND DESIGN
(HIGHWAY ENGINEERINIG)

Time: 3hours **Max. Marks: 60**

Answer any five questions
All questions carry equal marks
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1.a) What are the functions of road pavement? Draw a neat sketch showing the structural functions of a pavement.
b) Briefly explain the factors affecting pavement design and give some examples.

2.a) Define vehicle damaging factor (VDF) and discuss the factors affecting VDF.
b) The following data is obtained from an axle load survey conducted for 3 days. Determine equivalent number of standard axle loads of 80 kN repetitions per year.

Axle load (kN)	30-40	40-50	50-60	60-70	70-80	80-90
No. of axles	54	65	64	78	103	98
Axle load (kN)	90-100	100-110	110-120	120-130	130-140	140-150
No. of axles	110	98	78	89	67	79

3.a) Discuss the vehicle – pavement interaction behavior for the following vibration cases:
i) Transient,
ii) Random and
iii) Damping.
b) Write a note on stress inducing factors in flexible and rigid pavements.

4.a) Discuss the use of 'dowel bars' and 'tie bars' in rigid pavements and also write a note on stresses developed in them.
b) Explain any one of the test methods for evaluation of vibration characteristics of pavements.

5. Discuss the in-situ tests with neat sketches for the following subgrade parameters:
a) CBR and
b) subgrade reaction.

6. Write the broad classification of design methods of flexible pavement. Discuss the design guidelines of flexible pavements as per the Indian Roads Congress Method (IRC: 37-2001).

7. Discuss the salient points in the analysis and design of rigid pavements as per the AASHTO and IRC methods.

8. What are the functions of overlays? Discuss the advantages and disadvantages of different types of overlays with suitable illustrations.

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