Mid-West University

Examinations Management Office

End Semester Examinations 2081

Bachelor level/ B.E. Civil/ 6th Semester — Full Marks: 50

Time: 3 hours — Pass Marks: 25

Subject: Transportation Engineering II (CE462/CE321)

- *Attempt all the questions*
- *Figures in the margin indicate full marks.*
- *Assume suitable values, with a stipulation, if necessary.*
- *Candidates are required to answer the questions in their own words as far as possible.*
- *NRS 2070, IRC NRRS 2076, NUS2071 and various design catalogue allowed in examination.*

1. a) Define Traffic Engineering. Explain human and environmental factors/characteristics to be considered in traffic engineering. **[1+3]**

b) List out various traffic study studied in traffic Engineering. What are the different causes of traffic accidents? Discuss briefly **[1+3]**

2. a) Difference between channelized and un-channelized intersection. Describe with neat diagrams of grade separated intersection types. **[3+2]**

b) The average normal flow of traffic on cross roads **A** and **B** during design period are 450 and 325 PCU per hour, the saturation flow values on these roads are estimated as 1500 and 1100 PCU per hour respectively. The all red time required for pedestrian crossing is 15 sec. Design two phase traffic signal by Webster's method. Assume suitable data if necessary **[3]**

3. a) What are the design factors for highway pavement? Design a flexible pavement using following data: **[2+4]**

i. Compacted sub-grade soil CBR = 5%
ii. Poorly graded gravel sub-base CBR = 30%
iii. Water Bound Macadam Base course = 70%
iv. Minimum thickness of the asphalt concrete = 5 cm
v. Present number of heavy traffic per day = 160
vi. Annual rate of traffic growth = 7.5%
vii. Design life = 10 years
viii. Construction period = 18 months

Use the Chart given herewith

b) Define 'radius of relative stiffness'. Write down the steps for the design of 'Rigid Pavement' as per the IRC guidelines **[1+3]**

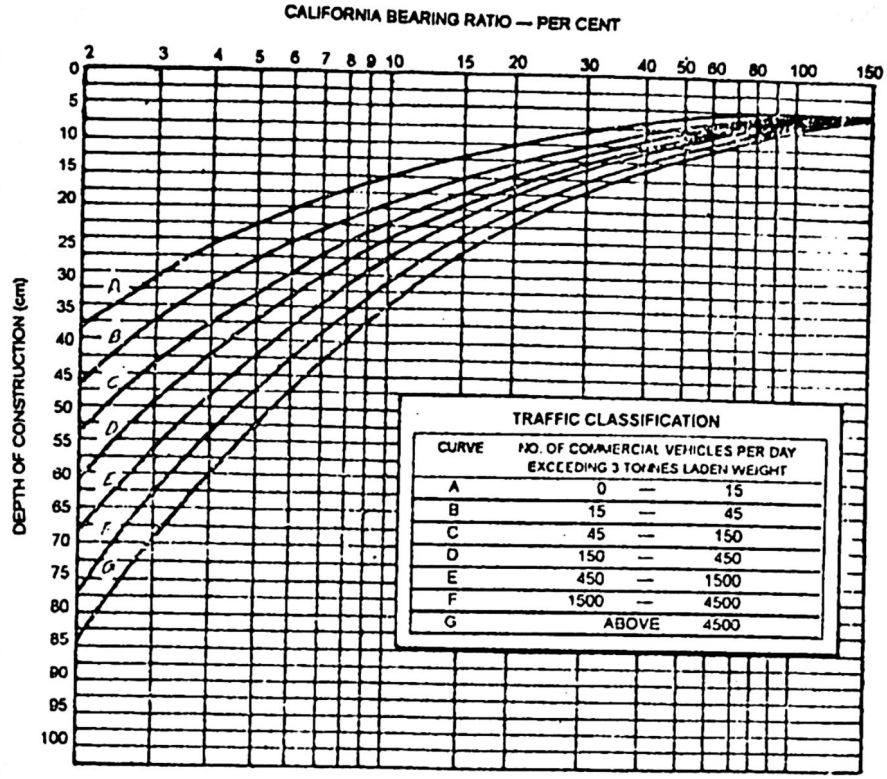
4. a) Explain Pavement Evaluation. Sketch the various types of failure in flexible and rigid pavement with cases of failure and remedial measures. **[2+4]**

b) What are the various design factors to be considered in highway lighting? Make some typical layout of street lighting. **[2+2]**

5. a) Define tack coat and prime coat. Describe construction steps of Surface Dressing over existing WBM base. **[1+3]**

b) List out the tools, equipments and plants and procedure for the execution of premix carpet construction in highway. **[2+2]**

6. Describe the various classifications of highway bridges. Explain the importance and methods of providing tunnel drainage, lighting and ventilation. [3+3]



TRAFFIC CLASSIFICATION

CURVE	NO. OF COMMERCIAL VEHICLES PER DAY EXCEEDING 3 TONNES LADEN WEIGHT		
A	0	—	15
B	15	—	45
C	45	—	150
D	150	—	450
E	450	—	1500
F	1500	—	4500
G	ABOVE		4500

The End