C020633(020)

B. Tech. (Sixth Semester) Examination, April-May 2022

(AICTE Scheme)

(Civil Engg. Branch)

TRAFFIC ENGINEERING and MANAGEMENT

Time Allowed : Three hours

Maximum Marks : 100

Minimum Pass Marks : 35

Note : *Attempt all questions. Part (a) of each question is compulsory and carries 4 marks. Solve any **two** parts from part (b), (c) & (d) and carries 8 marks each.*

Unit-I

1. (a) Define PCU.

(b) Explain mechanical methods of traffic forecast.

(c) Problems due to mixed traffic and other conditions in developing countries.

(d) Explain the factors on which PCU values depend.

Unit-II

2. (a) Explain AADT.

(b) Enumerate the different methods of carrying out traffic volume studies. Indicate the principal of each.

(c) Define the terms basic capacity, possible capacity and practical capacity and its importance in traffic engineering in detail.

(d) Explain the fundamental diagrams of traffic flow and derive a relationship between flow, speed and density.

Unit-III

3. (a) What are the objectives of accident studies?

(b) Write a note on lightening layouts for highways and intersection.

(c) What are the causes of road accidents and discuss how each of these factors leads to accident and its preventive measures.

(d) Explain with neat sketch (i) Condition diagram (ii) Collision diagram, and its use in accident studies.

Unit-IV

4. (a) Define Traffic Engineering.

(b) What is Traffic Rotary? What are its advantages and limitations in particular reference to traffic conditions in Chhattisgarh?

(c) What do you understand by traffic signs? Classify them with their neat sketches.

(d) Explain how the points of traffic conflict are reduced by introducing one way streets.

Unit-V

5. (a) In a one-lane one-way homogeneous traffic stream, the observed average headway is 3.0s. The flow (expressed in vehicles/hr) in this traffic stream is?

(b) A pre-timed four phase signal has critical lane flow rate for the first three phases as 200, 187 and 210 veh/h with saturation flow rate of 1800 veh/h/lane for all phases. The lost time is given as 4 seconds for each phase. If the cycle length is 60 seconds, the effective green time (in seconds) of fourth phase is?

(c) An isolated three-phase traffic signal is designed by Webster's method. Theoritical flow ratios for three phases are 0·2, 0·3 and 0·25 respectively, and lost time per phase is 4 seconds. The optimum cycle length (in seconds) is?

(d) Explain the Webster's approach for the design of a fixed time traffic signal.