



USN

| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|
| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|

18CV652

Sixth Semester B.E. Degree Examination, July/August 2022 Traffic Engineering

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Explain with sketch PIEV theory. (08 Marks)
- b. Explain in detail the road user characteristics. (12 Marks)

OR

- 2 a. A passenger car weighing 1800kg is to accelerate at a rate of 2m/sec^2 from a speed of 12kmph to 22kmph in the first gear. The frontal area and coefficient of air resistance are 2.38m^2 and 0.37 respectively. The transmission and rear gear ratio are 2.85:1 and 3.87:1 respectively. The radius and deformation factor of tyres are 0.35m and 0.945 respectively. Determine the engine horse power and speed of engine if transmission efficiency is 0.88. Take the gradient as +1.2% and $f = 0.025$. (10 Marks)
- b. Explain urban traffic problems and measure to meet the problems. (10 Marks)

Module-2

- 3 a. Explain various methods of origin destination survey. (10 Marks)
- b. Explain types of off street parking. (10 Marks)

OR

- 4 a. List various statistical methods in traffic engineering studies. Explain any two methods. (10 Marks)
- b. Two vehicles 'A' and 'B' approaching at right angles, 'A' from west and 'B' from south, collide with each other. After collision vehicle 'A' skids in a direction 50°N of west and vehicle 'B' 60°E of north. The initial skid distances of vehicles 'A' and 'B' are 38m and 20m respectively before collision. The skid distance after collision are 15m and 36m respectively. If the weights of vehicles 'A' and 'B' are 4. T and 6.0T. Calculate the original speeds of vehicle. Assume $f = 0.55$. (10 Marks)

Module-3

- 5 a. The average normal flow on cross roads 'A' and 'B' during design period are 400pcu and 250pcu per hour. The saturation flows are 1250pcu and 1000pcu hour respectively. The all red time required for pedestrian crossing is 12 seconds. Design a two phase signal by Webster's method. (10 Marks)
- b. Design a rotary intersection for the traffic flow in an urban section. At the intersection of two highways in the design year are given below.

| Approach | Left Turning | | | Straight ahead | | | Right turning | | |
|----------|--------------|----|-----|----------------|-----|-----|---------------|----|-----|
| | V1 | V2 | V3 | V1 | V2 | V3 | V1 | V2 | V3 |
| N | 200 | 50 | 100 | 250 | 100 | 150 | 150 | 50 | 80 |
| E | 180 | 60 | 80 | 220 | 50 | 120 | 200 | 40 | 120 |
| S | 250 | 80 | 100 | 150 | 50 | 90 | 160 | 70 | 90 |
| W | 220 | 50 | 120 | 180 | 60 | 100 | 250 | 60 | 100 |

V1 → cars, V2 → commercial, V3 → Scooter. Consider pcu values for cars 1, commercial vehicles 2.8 and for scooters 0.75, entry width 10m, length of weaving section 55m.

(10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.



18CV652

OR

- 6 a. Explain traffic signal design as per IRC method. (10 Marks)
b. Discuss briefly the different types of co-ordinated signal system. (10 Marks)

Module-4

- 7 a. Describe the causes of road accidents and also suggest preventive measures to control accidents. (10 Marks)
b. What are the major air pollutants due to road traffic? Explain consequences of each. (10 Marks)

OR

- 8 a. List out the detrimental effects of traffics on the environment and explain any two. (10 Marks)
b. Explain various techniques for control of traffic noise. (10 Marks)

Module-5

- 9 Write short notes on:
a. Traffic system management
b. Travel demand management
c. Traffic regulatory measures
d. Traffic congestion. (20 Marks)

OR

- 10 a. Explain traffic management, enforcement and education. (10 Marks)
b. Explain parking pricing and congestion pricing methods to control traffic management. (10 Marks)

* * * * *