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15CV561

Fifth Semester B.E. Degree Examination, June/July 2019 Traffic Engineering

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- 1 a. Explain the interdependency of "land use and transport" with a diagram. (10 Marks)
 b. Discuss briefly the PIEV theory. (06 Marks)

OR

- 2 a. Describe the fundamentals of traffic flow. (06 Marks)
 b. A passenger car weighing 3 tonnes is required to accelerate at a rate of 3m/sec^2 in the first gear from 9 speed of 10 kmph to 25kmph. The gradient is +1% and road has a black topped surface. The frontal projection area of the car is 2m^2 . The car tyres have radius of 0.33m. The rear axle gear ratio is 3.82 : 1 and the first gear ratio is 2.78 : 1. Calculate the speed of the engine. The radius and deformation factor for tyres is 0.36 and 0.95 respectively. Assume transmission efficiency as 0.88 and $f = 0.02$, $c_a = 0.39$. (10 Marks)

Module-2

- 3 a. Explain the different types of classified volume survey presentation. (06 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 4.0 and 6.0T. Calculate the original speeds of vehicle. Assume $f = 0.55$. (10 Marks)

OR

- 4 a. Explain concept of Level Of Service (LOS) and its applications. (06 Marks)
 b. The table Q4(b) below gives the consolidated data of spot speed studies on a section of a road. Determine : i) the upper and lower values or speed limits for installing speed regulations ii) modal speed for the range. (10 Marks)

Table Q4(b) : Speed Studies

Speed range kmph	Number of speed observations	Speed range kmph	Number of speed observations
0 – 10	0	50 – 60	216
10 – 20	11	60 – 70	68
20 – 30	30	70 – 80	24
30 – 40	105	80 – 90	0
40 – 50	233		

(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.

**Module-3**

- 5 a. At a right angled intersection of two roads, road 1 has four lanes and road 2 has two lanes with a width of 12m and 6.6m respectively. The volume of traffic approaching the intersection during design hour are 900 and 743 PCU/hr on the two approaches of road 2. design the signal timings as per IRC. (12 Marks)
- b. Explain the significant roles of traffic control personnel. (04 Marks)

OR

- 6 a. Explain the three types of traffic signals with 3 examples for each with diagrams. (10 Marks)
- b. Explain the design factors to be considered for design of rotary intersection. (06 Marks)

Module-4

- 7 a. Describe the causes of road accidents and also suggest preventive measures to control accidents. (08 Marks)
- b. Describe the various environmental hazards due to traffic in urban areas. (08 Marks)

OR

- 8 a. Explain the arrangement of street lighting in urban areas and show the lighting arrangement sketch for signalized and rotary intersections. (08 Marks)
- b. Explain the importance and promotion of non motorized transport. (08 Marks)

Module-5

- 9 a. Explain the various methods of traffic segregation. (08 Marks)
- b. Explain the concept of area traffic management system control (ATC) with an example. (08 Marks)

OR

- 10 a. Explain applications of Intelligent Transport System (ITS). (08 Marks)
- b. Explain parking pricing and congestion pricing methods to control traffic management. (08 Marks)
