

APJ ABDULKALAM TECHNOLOGICAL UNIVERSITY
08 PALAKKAD CLUSTER



Q. P. Code :TE0820101-I

(Pages: 2)

Name:

Reg. No:.....

FIRST SEMESTER M.TECH. DEGREE EXAMINATION MARCH 2021

Branch: Civil Engineering

Specialization: Transportation Engineering

08CE6201 Fundamentals of Traffic Engineering

(Common to TE)

Time: 2 hour 15 minutes

Max. Marks: 60

Answer all six questions.

Modules 1 to 6: Part 'a' of each question is compulsory and answer either part 'b' or part 'c' of each question.

Q. No.	Module 1	Marks
1.a	From traffic engineering point of view, explain the importance of cone of vision and peripheral vision.	3

Answer b or c

b	Describe the vehicle characteristics affecting the traffic performance.	6
c	What are the human factors governing the road user behaviour?	6

Q. No.	Module 2	Marks
2.a	Explain the ill effects associated with parking.	3

Answer b or c

b	Define O-D survey? What are the various methods for conducting OD survey?	6
c	Explain with figures different type of parking system.	6

Q. No.	Module 3	Marks
3.a	What are the applications of data exploration techniques in Transportation Engineering?	3

Answer b or c

b	At an uncontrolled T junction, past experience indicates that the probability of a vehicle arriving on the side road during a 15 second interval and turning right into the main road is 1/5. Find the probability that in a period of 1 minute, there will be 0,1,2,3, or 4 vehicles arriving and turning right.	6
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- c At a highway location with poor geometrics, the mean spot speed observed with a sample of 200 vehicles was 58.3 KPH with a standard deviation of 12.2 KPH. After effecting improvements to the geometrics, the mean speed observed with a sample of 250 vehicles was 61.2 KPH with a standard deviation of 9.8 KPH. Has there been a significant increase in the speed after the improvements? 6

Q. No.	Module 4	Marks
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| 4.a | Explain the 3E's of any road safety program | 3 |
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Answer b or c

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| b | Explain the principles of Street furniture design? | 6 |
| c | What are the Regulations concerning a Driver. | 6 |

Q. No.	Module 5	Marks
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| 5.a | Define the terms (i) Cycle (ii) Cycle Length (iii) Interval and (iv) Phase in Signal Design | 4 |
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Answer b or c

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|---|---|---|
| b | The average normal flow of traffic on cross roads A and B during design period 8 are 400 and 250 pcu per hour; the saturation flow values on these roads are estimated as 1250 and 1000 pcu per hour respectively. The all-red time required for pedestrian crossing is 12 secs. Design two phase traffic signal by Webster's Method. | 8 |
| c | Explain with figures, the different types of at grade intersection | 8 |

Q. No.	Module 6	Marks
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| 6.a | Define the microscopic stream characteristics. Give their relationship with the corresponding macroscopic stream characteristics. | 4 |
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Answer b or c

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| b | Define fundamental variables in traffic flow theory. Derive the relationship between flow and density, if speed density follows Greenshield's model. | 8 |
| c | The maximum capacity of a two lane carriageway of a four lane dual carriageway is 200veh per hour. Due to pipe laying operations the width of two lane carriage way is reduced restricting the maximum capacity to 1200 veh/hour. When the flow upstream beyond the influence of bottleneck is reasonably steady and free flowing at 1500 veh/hour. Find the mean speed of traffic in the bottleneck. The mean space headway when the vehicles are stationary is 8 m, Assume the relationship between the speed and concentration is linear. | 8 |