

**APJ ABDULKALAM TECHNOLOGICAL  
UNIVERSITY**

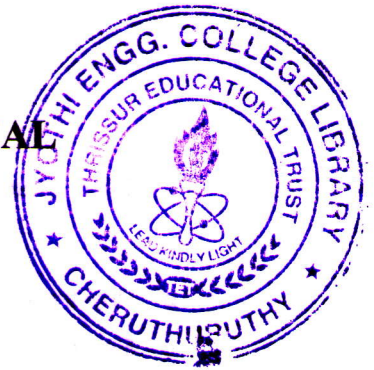
**08 PALAKKAD CLUSTER**

Q. P. code : TB1171

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Name:

Reg No:



**FIRST SEMESTER M.TECH. DEGREE EXAMINATION DEC 2017  
CIVIL (Transportation Engineering)**

**08CE6201 FUNDAMENTALS OF TRAFFIC ENGINEERING**

Time:3 hours

Max.marks: 60

Answer all six questions. Part 'a' of each question is compulsory.

Answer either part 'b' or part 'c' of each question

**Module 1**

- 1.a Define PCU and what are the factors affecting PCU values. 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

**Module 2**

- 2.a Explain the method cordon count in parking? 3  
**Answer b or c**
- b Define O-D survey? What are the various methods for conducting OD survey? 6
- c Explain with neat sketches the collision diagrams and condition diagrams. 6

**Module 3**

- 3.a Explain the data exploration techniques in traffic engineering 3  
**Answer b or c**
- b The spot speeds at a particular location are normally distributed with a mean of 51.7 kph and a standard deviation of 8.3 kph. What is the probability that 6
- a) The speed exceeds 65 kph.
- b) The speeds lie between 40 kph and 70 kph.
- c What are the statistical methods used for the traffic data analysis? 6

#### Module 4

- 4.a Describe speed zoning at horizontal curves? 3

Answer b or c

- b How traffic management measures can reduce the accident rate in the country? 6
- c Explain the principles of Street furniture design? 6

#### Module 5

- 5.a Describe the importance of channelization in the control of traffic? 4

Answer b or c

- b A fixed time 2 phase signal is to be provided at an intersection having a North – South and a East – West road where only straight ahead traffic is permitted. The design hour flows from the various arms and the saturation flows for these arms are given below. 8

	North	South	East	West
Design hour flow (q) in PCU/hour	800	300	700	1000
Saturation flow (s) in PCU/hour	2200	2000	3000	3000

Calculate the optimum cycle time and green times for the minimum overall delay. Assume the value of amber period is 2 seconds and the time lost per phase due to starting delays as 2 seconds. Also Sketch the timing diagram for each phase.

- c Explain the different types of road markings? 8

#### Module 6

- 6.a Describe the moving observer method with its advantages? 4

Answer b or c

- b Explain the fundamental diagram of traffic flow and derive the linear relationship between speed and concentration? 8
- c The maximum capacity of a two lane carriageway of a four lane dual carriageway is 2200veh per hour. Due to pipe laying operations the width of two lane carriage way is reduced restricting the maximum capacity to 1200veh/hour. When the flow upstream beyond the influence of bottleneck is reasonably steady and free flowing at 1500veh/hour. 8

Find the mean speed of traffic in the bottleneck. The mean space headway when the vehicles are stationary is 8m, Assume the relationship between the speed and concentration is linear.