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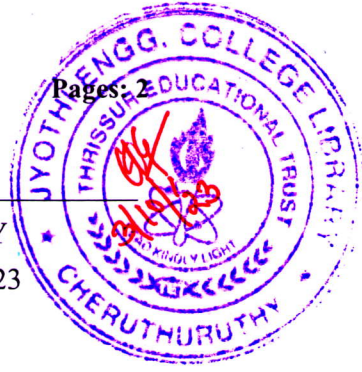
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Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
Second Semester M.Tech Degree Regular Examination June 2023



Discipline: CIVIL ENGINEERING

Course Code & Name: 222TCE004 TRAFFIC ENGINEERING

Max. Marks: 60

Duration: 2.5 Hours

PART A

Answer all questions. Each question carries 5 marks

Marks

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| 1 | Differentiate between microscopic and macroscopic characteristics of traffic stream with examples. | (5) |
| 2 | Explain how the results of spot speed studies are presented. | (5) |
| 3 | Define uninterrupted flow with examples. Mention its characteristics. | (5) |
| 4 | Explain the concept of phase diagram in traffic signal design with examples. | (5) |
| 5 | Mention the applications of probability and statistics in Traffic Engineering. | (5) |

PART B

Answer any 5 questions. Each question carries 7 marks

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| 6 | Explain in detail the various components of road traffic and its influence in the analysis of traffic stream? | (7) |
| 7 | What is the significance of travel time and delay study in the analysis of traffic stream? How travel time is determined through the moving observer method? | (7) |
| 8 | Describe in detail the HCM method for the determination of Capacity and Level of Service of multilane highways. | (7) |
| 9 | Write a note on fluid flow analogy in traffic flow modelling. | (7) |
| 10 | A road consists of 4 lanes, 2 in each direction. The maximum capacity of 2 lanes in one direction is 2000veh/hr. When vehicles are stationary in a jamming condition, the average length occupied by a vehicle is 6.25m. During a period of observation, the actual volume of traffic in one direction is steady at the rate of 1200 veh/hr. This flow is brought to a halt when a traffic signal turns red and a queue forms. Find the time in seconds that elapses from the moment the signal turns red until the stationary queue reaches another intersection 75m from the signal. Assume a linear relationship between speed and concentration. | (7) |

- 11 Speed data were collected at a section of highway before and after maintenance work. The mean speeds and standard deviations before and after maintenance work are 38.7 kmph, 8.6 kmph, 43.8 kmph, 7.5 kmph respectively. Determine whether there was any significant difference between the mean speeds before and after maintenance work at 95% confidence level? Sample sizes are 280 and 320 respectively. (7)
- 12 Define traffic simulation. What are the advantages of traffic simulation? Illustrate the steps involved in traffic simulation. (7)
