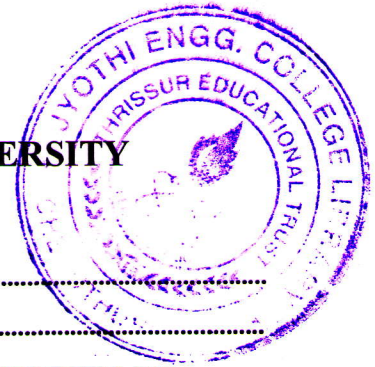


APJ ABDULKALAM TECHNOLOGICAL UNIVERSITY

08 PALAKKAD CLUSTER



Q. P. Code: TE0821101-I

(Pages: 2)

Name:

Reg. No:

FIRST SEMESTER M.TECH. DEGREE EXAMINATION DECEMBER 2021

Branch: Civil Engineering

Specialization: Transportation Engineering

08CE6201 FUNDAMENTALS OF TRAFFIC ENGINEERING

(Common to TE)

Time: 3 hours

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.

(Use of design tables is permitted)

Q. No.	Module 1	Marks
1.a	What is off tracking? Mention the factors on which this depends.	3
Answer b or c		
b	A vehicle travelling at 40kmph was stopped within 1.8 seconds after the application of the brakes. Determine the average skid resistance.	6
c	What are the different vehicular characteristics which affect the road design? Explain.	6
Q. No.	Module 2	Marks
2.a	What are the factors on which PCU values depend? Discuss briefly.	3
Answer b or c		
b	Explain how the speed and delay studies are carried out. What are the various uses of speed and delay studies?	6
c	Outline the home interview method of conducting O & D studies. How are O & D data represented and interpreted?	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** The speed and concentration of vehicles in a traffic stream were observed and the following data were obtained. **6**

Concentration (Veh./km)	5	10	15	20	25	30	35	40	45	50
Speed (KPH)	72	68	61	52	47	39	32	27	20	13

Find the regression equation for determining the speed from concentration

- c** In analyzing the employment structure of households in an urban area, in connection with a trip generation study it has been found that there are 2500 households of 4 members in each. Find the probability that a particular household of this size has 0,1,2,3 and 4 employed residents. **6**

Q. No.	Module 4	Marks
4.a	Explain the 3E's of any road safety programme.	3

Answer b or c

- b** Explain the various design factors in road lighting. **6**
- c** Mention the applications of a collision diagram and condition diagrams. **6**

Q. No.	Module 5	Marks
5.a	List out the general principles of traffic signing.	4

Answer b or c

- b** Explain the various factors to be considered during the design of traffic signal timings. **8**
- c** With neat sketches show few typical patterns of un-channelized and channelized intersections. What are the advantages and limitations of un-channelized and channelized intersections? **8**

Q. No.	Module 6	Marks
6.a	Distinguish between macroscopic and microscopic models.	4

Answer b or c

- 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 speed density relationship of traffic on a section of a freeway lane was estimated to be $V_x = 18.2 \ln(220/k)$ **8**
- i. What is the maximum flow, speed and density at this flow?
 - ii. What is the jam density?