

**APJ ABDULKALAM TECHNOLOGICAL UNIVERSITY
08 PALAKKAD CLUSTER**

Q. P. Code : TE08 19201-I

(Pages: 3)

Name:

Reg. No:



THIRD SEMESTER M.TECH. DEGREE EXAMINATION DECEMBER 2019

Branch: Civil Engineering

Specialization: Transportation Engineering

08CE7201 HIGHWAY GEOMETRIC DESIGN

(Use of design tables is permitted)

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.

Q. No.	Module 1	Marks
1.a.	Differentiate International roughness index and International friction index.	3

Answer b or c

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|----|--|---|
| b. | Determine the height of the crown w.r.t the edges of the road in the following cases. | 6 |
| | i) Bituminous road 7.5m wide | |
| | ii) Concrete road 7.5m wide | |
| c. | A driver with a perception reaction time of 2.5 sec is driving at 105km/h when she observes that an accident has blocked the road ahead. Determine the distance the vehicle would move before the driver could activate the breaks. The vehicle will continue to move at 105km/h during the perception reaction time of 2.5 sec. | 6 |

Q. No.	Module 2	Marks
2.a.	Briefly explain Impact factor.	3

Answer b or c

- | | | |
|----|---|---|
| b. | What are the key defining characteristics of roundabouts that distinguish them from other traffic circles? | 6 |
| c. | Calculate the stopping sight distance for a design speed of 65km/h assuming the coefficient of friction as 0.36 and total reaction time of drivers. | 6 |

Q. No.	Module 3	Marks
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3.a.	Define Grade resistance.	3
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Answer b or c

b.	A falling gradient of 1 in 20 meets a rising gradient of 1 in 40 on a major district highway in plain country. Find the length of valley curve which should provide safe driving at night.	6
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c.	What is the criteria for selecting shape of valley and summit curve?	6
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Q. No.	Module 4	Marks
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4.a.	What is geometric consistency and what are the evaluating measures for geometric consistency?	3
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Answer b or c

b.	Explain correlation between safety and geometric consistency.	6
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c..	List out the driver workload measurement techniques and explain any two.	6
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Q. No.	Module 5	Marks
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5.a.	Define i) Divisional Island and ii) Refuge Island.	4
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Answer b or c

b.	Describe the concept of rotary intersections and list out the design elements of rotary with neat figure. Explain the advantages and disadvantages of rotary intersection.	8
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c.	Show the conflict points at the following types of intersections:	8
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i) Cross – roads, both roads two way

ii) Cross roads, one road one way

Q. No.	Module 6	Marks
6.a.	What is a traffic rotary? What are its advantages and limitations?	4
Answer b or c		
b.	Briefly describe the tasks you would include in a comprehensive parking study at railway station. Indicate how you would perform each task and the way you would present the data collected.	8
c.	What are the various types of traffic markings commonly used? What are the uses of each?	8