APJ ABDUL KALAM TECHNOLOGICAL UNIVERSIT Ø8 PALAKKAD CLUSTER

Q. P. Code: TE0822301-I

(Pages: 2)

Name:

Reg. No:....

THIRD SEMESTER M.TECH DEGREE EXAMINATION DECEMBER 2022

Branch: Civil Engineering

Specialization: Transportation Engineering

08CE7201 HIGHWAY GEOMETRIC DESIGN

(Use of design tables are permitted)

Time: 3 hours Max. M		Marks: 60
	Answer all six questions.	
Modu	ules 1 to 6: Part 'a' of each question is compulsory and answer either part 'b' or part 'c' of each que	estion.
Q. No.	Module 1	Marks
1.a.	What are the functional classifications of a highway?	3
	Answer b or c	
b.	Determine the height of the crown with respect to the edges of the road in the following cases.	6
	i) WBM road 3.8m wide in areas of low rainfall	
	ii) WBM road 7.0m wide in areas of heavy rainfall	
c.	Discuss the various factors affecting the practical capacity of roads.	6
Q. No.	Module 2	Marks
2.a.	What are the objectives of horizontal curves? Answer b or c	3
ٍ b.	Calculate the overtaking sight distance on a four lane divided SH in a plain terrain. Compare this with IRC recommendations.	6
с.	The design of a road is 65kmph, the friction coefficient is 0.36 and reaction time of driver is 2.5sec. Calculate the values of (a) Head light sight distance and (b) Intermediate sight distance required for the road.	6
Q. No.	Module 3	Marks
3.a.	What are the different types of gradients?	3
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Answer b or c

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b.	An existing vertical curve on highway joins a +4.4% grade with a -4.4% grade.			
	If the length of the curve is 82m, what is the maximum safe speed of this curve? What speed should be posted if 8km/h increments are used?			
c.	Discuss the problems in highway valley curves and the best shape of a valley curve.	6		
Q. No.	Module 4	Marks		
4 .a.	What are the evaluating measures for geometric consistency?	3		
Answer b or c				
b.	Explain the alignment indices for evaluating the consistency of highway.	6		
c.	How Physiological measures is related to consistency. List out the parameters considered in Physiological measures for evaluating consistency.	6		
Q. No.	Module 5	Marks		
5.a	Briefly explain design principles of intersections.	4		
	Answer b or c			
b.	Vehicle paths may be confined so that no more than two paths cross at any one	8		
	point. This is the reason for considering Channelization at an intersection. What			
	are the other reasons for selecting channelization at an intersection?			
c.	Describe different types of traffic circles. Indicating under what conditions, you	8		
	would recommend the use of each.			
Q.)No.	Module 6	Marks		
6.a.	Define the following terms.	4		
	i) Corner Circulation Area			
	ii) Crosswalk Circulation Area			
۷	iii) Pedestrian Delay	*		
	iv) Pedestrian LOS Score			
	Answer b or c			
b.	Describe the factor that must be taken into account in the design of bicycle path.	8		
c.	Classify the different types of traffic signs and mention the general objective of	8		
1	each type of sign; with sketches show the general shape of these types of signs.			

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