Course Code: 1950122 Roll no: MLRS- R19

MARRI LAXMAN REDDY
INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AN AUTONOMOUS INSTITUTION)
(Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad)
Accredited by NBA and NAAC with 'A' Grade & Recognized Under Section2(f) & 12(B)of the UGC act,1956

III B.Tech I Sem Regular End Examination, January 2022

Transportation Engineering

(CIVIL ENGINEERING)

Time: 3 Hours. **Max. Marks: 70**

Note: 1. Question paper consists: Part-A and Part-B.
2. In Part – A, answer all questions which carries 20 marks.
3. In Part – B, answer any one question from each unit.
Each question carries 10 marks and may have a, b as sub questions.

PART- A

(10*2 Marks = 20 Marks)

1.	a)	What is the importance of Highways?	2M	CO1	BL2
	b)	Explain classification of Roads.	2M	CO1	BL1
	c)	Define Camber?	2M	CO2	BL1
	d)	Where and why extra-widening of pavements required?	2M	CO2	BL2
	e)	Classify the factors affecting road accidents?	2M	CO3	BL4
	f)	What approach would you use for Channelization of roads?	2M	CO3	BL3
	g)	Define flash and fire points of bitumen?	2M	CO4	BL1
	h)	Appraise the use of elongation index of aggregates in mixes?	2M	CO4	BL5
	i)	Compare flexible and rigid pavements?	2M	CO5	BL2
	j)	What are the factors affecting pavement design?	2M	CO5	BL2

PART- B

(10*5 Marks = 50 Marks)

2	a)	Explain the significance of reconnaissance survey in locating a new highway's centre line?	5M	CO1	BL 5
	b)	Draw a flow chart describing the process of activities involved in highway location surveys?	5M	CO1	BL 3
		OR			
3		What are the factors affecting alignment of a new highway? Describe with sketches?	10M	CO1	BL 2
4	a)	What is the importance of sight distance for geometric design of highways?	5M	CO2	BL 2
	b)	Derive an expression for calculating overtaking sight distance.	5M	CO2	BL 3
		OR			

5		A horizontal curve of 300 m radius is to be designed for 80 kmph speed. The road is a two-lane road (7 m) and the super elevation is provided by rotating the pavement surface about its crown. The rate of introduction of super elevation is 1 in 150. If the maximum wheel base length is 6.2 m. Calculate the required minimum length of the transition curve?	10M	CO2	BL 5
6	a)	Briefly explain about level of service (LOS) along with a neat sketch.	5M	CO3	BL 1
	b)	Explain about on-street parking and off-street parking facilities with neat diagrams.	5M	CO3	BL 4
		OR			
7		Define cycle time and determine the optimum cycle time based on Webster's Method. Take the sum of ratios of normal flows to the saturation flows of two directional traffic flow = 0.6. The total lost time per cycle =10.0 sec. Assume, other values suitably.	10M	CO3	BL 5
8	a)	Describe the penetration test on bitumen? What are the standards applicable?	5M	CO4	BL 3
	b)	Explain the method of conducting CBR test on soil?	5M	CO4	BL 5
		OR			
9		What is the need of modified bitumen? Explain the advantages of modifying bitumen by different admixtures?	10M	CO4	BL 4
10	a)	Distinguish BUC and TDC with sketches?	5M	CO5	BL 4
	b)	Calculate maximum warping stresses at the edge of a slab of 4.5 m length and 3.5 m width. Take the elastic modulus of concrete as 3×10^4 MPa, radius of relative stiffness as 1.00 m, temperature difference between the top and bottom surface of the slab as 15 ºC, coefficient of thermal expansion of concrete as 10×10^{-6} per ºC and Poisson's ratio of concrete as 0.15.	5M	CO5	BL 5
		OR			
11		Elaborate the salient features of the design of cement concrete slab pavement according to the guidelines of IRC:58-2015?	10M	CO5	BL 6

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