Register Number:……………..

KUMARAGURU
college of technology
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B.E/B.TECH DEGREE EXAMINATIONS: APRIL / MAY 2023

(Regulation 2018)

Fourth Semester

CIVIL ENGINEERING

U18CEI4202: Highway and Traffic Engineering

COURSE OUTCOMES

CO1: Acquire knowledge about the surveys involved in planning and highway alignment.

CO2: Design the geometric elements of highways and expressways.

CO3: Apply the knowledge of the traffic studies and implement traffic regulation and control measures and intersection design.

CO4: Characterize pavement materials and design flexible and rigid pavements as per IRC.

CO5: Understand the concepts of pavement distress and methods to evaluate and maintain the pavement.

Time: Three Hours   **Maximum Marks: 100**

Answer all the Questions:-
PART A (10 x 2 = 20 Marks)
(Answer not more than 40 words)

1.	List the factors controlling highway alignment.	CO1	[K_1]
2.	Recall the term Cul-De Sac in highway engineering.	CO1	[K_1]
3.	Differentiate lag distance and braking distance.	CO2	[K_2]
4.	Where the vertical curves are provided in highway alignment?	CO2	[K_1]
5.	Mention the importance of annual average daily traffic.	CO3	[K_1]
6.	Outline the advantages of fixed time signals and vehicle actuated signals.	CO3	[K_2]
7.	How to calculate the CBR value in highway materials?	CO4	[K_2]
8.	Why joints are provided in cement concrete pavements?	CO4	[K_3]
9.	Classify the types of cracks formed in the cement concrete roads.	CO5	[K_2]
10.	Define mud pumping in rigid pavements.	CO5	[K_1]

Answer any FIVE Questions
PART B (5 x 16 = 80 Marks)
(Answer not more than 400 words)

11.	a)	Develop how modern methods such as GIS and GPS may be used for the reconnaissance survey for highway alignment.	8	CO1 [K_2]
	b)	Elaborate on the PPP schemes of highway development of India.	8	CO1 [K_2]

12.	a)	Calculate the stopping sight distance required to avoid head on collision of two cars approaching opposite directions at a speed of 75 kmph and 85 kmph. Assume that the reaction time of drivers be 2.5 secs and co-efficient between road surface and tyres be 0.4.	10	CO2	[K$_3$]
	b)	Illustrate the steps involved in the design of hill roads.	6	CO2	[K$_2$]
13.	a)	Summarize the different methods of collecting Origin Destination (OD) studies with its significance.	8	CO3	[K$_2$]
	b)	Explain the various types of traffic signals and their functions. How are the signal timings decided?	8	CO3	[K$_2$]
14.	a)	Discuss in detail about the IRC method of flexible pavement design. Also write the limitation of this method.	8	CO4	[K$_2$]
	b)	Classify different types of joints in rigid pavement.	8	CO4	[K$_2$]
15.	a)	Discuss the procedure of road construction in water logged areas.	8	CO5	[K$_2$]
	b)	Indicate the causes and remedial measures for joint failures in pavement.	8	CO5	[K$_2$]
16.	a)	Mention the applications of geotextile and geo membrane in road construction.	8	CO4	[K$_3$]
	b)	Demonstrate the modern construction materials used for the construction of pavements? Explain their characteristics and usage in details.	8	CO4	[K$_3$]

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