Q. Code:470203

Reg. No. | | | | | | | | | | | | | |

B.E./ B. TECH.DEGREE EXAMINATIONS, MAY 2024

Third Semester

CE22310 – HIGHWAY ENGINEERING: THEORY AND PRACTICES

(Civil Engineering)

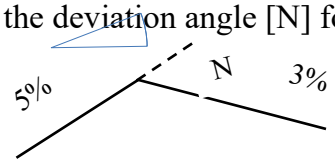
(Regulation 2022)

TIME:1 HOUR 30 MINUTES **MAX. MARKS: 50**

COURSE OUTCOMES	STATEMENT	RBT LEVEL
CO 1	Upon successful completion of the course, the students should be able to Describe various factors considered in fixing alignment for a highway.	**2**
CO 2	Explain different components involved in highway geometric design.	**3**
CO 3	Design a flexible and rigid pavement as per IRC procedure.	**3**
CO 4	Demonstrate different tests for highway materials and the relevant tests.	**2**
CO 5	Describe the procedure for pavement evaluation and maintenance methods.	**2**

PART- A(10x2=20Marks)

(Answer all Questions)

		CO	RBT LEVEL
1.	The National Highway [NH] and State Highway [SH] have the same design speed and geometric design specification. [True/ False]	**1**	**2**
2.	Summarize your understanding on 'Regression Analysis' in Transportation Engineering.	**1**	**2**
3.	Interpret the acronym 'PIEV'.	**2**	**2**
4.	Calculate the deviation angle [N] for the given summit curve: 	**2**	**2**
5.	Explain the term 'axle load spectrum'.	**3**	**2**
6.	Describe the role of 'dowel bars' in cement concrete pavement.	**3**	**2**
7.	Expand the following acronym: [1] BIS [2] IRC	**4**	**1**
8.	List the viscosity grading of bitumen.	**4**	**1**
9.	Explain the importance of skid resistance of pavement surface.	**5**	**2**
10.	As per IRC:37, give the details of rut depth?	**5**	**1**

PART- B (2x 10=20Marks)

		Marks	CO	RBT LEVEL
11. (a)	The speeds of overtaking and overtaken vehicles are 70 and 40 kmph respectively on a two-way traffic road. The average acceleration during overtaking may be assumed as 0.99 m/s^2. (a) Calculate the overtaking sight distance (b) What is the minimum length of overtaking zone	**(10)**	**2**	**3**
	(OR)			
(b)	Determine the off-tracking of a vehicle with wheel base 7.0 m while negotiating a horizontal curve of radius 100 m. Assume necessary data.	**(10)**	**2**	**3**
12. (a)	Explain CBR and the test procedure in the laboratory.	**(10)**	**4**	**2**
	(OR)			
(b)	How are Flakiness Index [FI] and Elongation Index [EI] values determined in the laboratory. Discuss the importance of the test.	**(10)**	**4**	**2**

PART- C (1x 10=10Marks)

(Q.No.13 is compulsory)

		Marks	CO	RBT LEVEL
13.	With a diagram explain the working of Benkelman beam for measurement of pavement deflection.	**(10)**	**5**	**2**

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