B.E. Civil Engineering Fifth Semester
CE502 - Transportation Engineering-I

P. Pages : 2

Time : Three Hours

GUG/W/18/1601

Max. Marks : 80

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Notes : 1. All questions carry equal marks and compulsory.
2. Due credit will be given to neatness and adequate dimensions.
3. Assume suitable data wherever necessary.
4. Illustrate your answers wherever necessary with the help of neat sketches.

1. a) Discuss the salient features of 3rd twenty year road development plan. **8**

b) Explain briefly the various surveys to be carried out for planning a new highway. **8**

OR

2. a) Briefly outline the main features of various road patterns commonly in use. Explain with sketches the star and grid pattern. **10**

b) Write a note on 3E's of traffic engineering. **6**

3. a) What are the objects of highway geometric design? List the various geometric elements to be considered in highway design. **8**

b) Derive an expression for finding SSD at level and at grades. **8**

OR

4. a) A valley curve is formed by a descending gradients of 1 in 40 which meets an ascending gradient of 1 in 30. **8**

i) Find the length of valley curve for a design speed of 80 kmph.

ii) Find the position of the lowest point of valley.

b) What are the factors considered for the design of pavements? Explain. **8**

5. a) What are the various tests conducted on road aggregate. State IRC specification for each of them. **8**

b) Discuss the construction steps involved for WBM layer of pavements. **8**

OR

6. a) Explain CBR method for design of flexible pavements as per IRC 37-2001. **8**

b) Explain briefly "AASHO" classification system of soil. **8**

7.	a)	Discuss the various points to be considered for site selection of major bridges.	**8**
	b)	How the bridges are classified and numbered.	**8**

<div align="center">**OR**</div>

8.	a)	Derive the expression for flood discharge by "Rational approach".	**8**
	b)	A bridge is proposed to be constructed across an alluvial stream carrying a discharge of $300m^3$/sec. Assuming the value of silt factor as 1.1. Determine the maximum scour depth when bridge consist of. i) Two spam of 35 each. ii) Three span of 30 m each.	**8**

9.	a)	Describe any two bridge superstructures.	**8**
	b)	Explain the following :-	**8**
		i) Inspection of bridges. ii) Launching of bridge.	

<div align="center">**OR**</div>

10.	a)	Enlist the types of bridge bearing. Explain with a neat sketch "Rocker and Roller bearing" with its function.	**8**
	b)	Clearly distinguish between suspension and cable stayed bridge? What are the factors governing their choice.	**8**

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