B.E. Civil Engineering (Model Curriculum) Semester-V
PCCCE503 - Transportation Engineering-I

P. Pages : 2

Time : Three Hours

*73 1 2 *

Max. Marks : 80

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

1. a) Discuss the Nagpur Road Plan and in what way it is different from Bombay Road plan. **8**

b) Explain the various survey to be considered out for finalizing of an alignment of new road. **8**

OR

2. a) With neat sketches, shows the various types of traffic signs, classifying them in proper groups. **8**

b) Write short note on:-

1) 3 E's of Traffic Engineering. **4**

2) PIEV theory. **4**

3. a) For a arterial road in an urban area, the design speed is kept as 100 kmph. Design the following road geometric elements. **6**
1) Stopping right distance & Night S. D.
2) Super elevation on horizontal curve. Take reaction time as 2.5 rec and radius of curve as 300m. Assume other data suitably

b) Calculate extra widening required for a national highway having carriageway width 10.5m, the other data is given below:- **6**
i) Radius of curve = 280m
ii) Length of wheel base = 6.1m
iii) Speed of Vehicle = 100 kmph.

c) Define Camber. Describe it's types with suitable sketches. **4**

OR

4. a) Derive an expression for finding the stopping right distance at level and at grades. **8**

b) Calculate the length of transition curve on a plain terrain using the following data:- **8**
1) Design speed = 80 kmph.
2) Radius of circular curve = 240m.
Allowable rate of introduction of super elevation
(Pavement rotated about centre line) 1:150

5.	a)	Explain with neat sketch CBR test with its limitation. Also draw penetration curve.	**7**
	b)	Compare flexible pavement with rigid pavement.	**4**
	c)	Find group index if a subgrade soil has following characteristics. i) Passing 425 micron = 76% ii) Passing 75 micron = 65% iii) Liquid limit = 49% iv) Plastic limit = 21% Also, rate the subgrade.	**5**

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

6.	a)	Explain step by step procedure for WBM roads. What is WBM?	**8**
	b)	Discuss the various test conducted on Tar and bitumen. Explain any one in detail.	**8**
7.	a)	Enlist the various load considered for design of highway bridge. Explain any one in detail.	**8**
	b)	Discuss various points to be considered for site selection of bridge.	**8**

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

8.	a)	Estimate flood discharge from the following data:- i) Catchment area = 23.8 sq.km. ii) Severest rainfall recorded 200mm in 4 hours iii) Length of forest point in catchment from bridge site = 4.75 km. iv) Average slope in catchment 1 in 80. v) Runoff co-efficient = 0.75. vi) Storm distribution coefficient = 0.84.	**8**
	b)	What is economical span? Derive expression with assumption.	**8**
9.	a)	What is meant by bridge superstructure. What are various types. Discuss in brief.	**8**
	b)	Write about bearing provided in bridge. Explain all types of bearings with neat sketches and their function.	**8**

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

10.	a)	Write short note on:- i) Inspection of bridges. ii) Culverts	**8**
	b)	What are the factors taken into account for the choice of superstructure?	**8**

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