

7E1712

Roll No. \_\_\_\_\_

Total No of Pages: **3**

**7E1712**

**B. Tech. VII - Sem. (Main) Exam., Feb.- March - 2021**

**PCC Civil Engineering**

**7CE4 – 01 Transportation Engineering**

**Time: 2 Hours**

**[To be converted as per scheme]**

**Max. Marks: 82**

**Min. Marks: 29**

*Instructions to Candidates:*

*Attempt all ten questions from Part A, four questions out of seven questions from Part B and two questions out of five from Part C.*

*Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.*

*Use of following supporting material is permitted during examination. (Mentioned in form No. 205)*

1. NIL

2. NIL

**PART – A**

**(Answer should be given up to 25 words only)**

**[10×2=20]**

**All questions are compulsory**

- Q.1 Discuss the role of transportation in the economic and social activities of the country. [2]
- Q.2 Write about the role of transportation in rural development in India. [2]
- Q.3 Give names of steps involved in construction of a new Highway project. [2]
- Q.4 Write names of elements which include geometric design of Highways. [2]
- Q.5 Give basic difference between Rigid pavement and Flexible pavement. [2]

- Q.6 What is the role of filler in bituminous mix? Write the name of the material used as filler. [2]
- Q.7 Give difference between Ports & Docks. [2]
- Q.8 Give names of important components of an airport layout. [2]
- Q.9 What are the basic functions of Ballast in Railway Construction? [2]
- Q.10 Define Runway length in construction of Airport. [2]

## **PART – B**

**(Analytical/Problem solving questions)**

**[4×8=32]**

**Attempt any four questions**

- Q.1 Discuss different modes of transportation. Give features of each of them based on their utility. [8]
- Q.2 Give classification of roads by Nagpur Road Plan. [8]
- Q.3 Give sketches of typical cross section for different categories of Urban & Rural roads. [8]
- Q.4 Give differences between Bitumen and Tar. [8]
- Q.5 Calculate the safe stopping sight distance for a design speed of 50 kmph for - [8]
- (a) Two-way traffic on a two-lane road
- (b) Two-way traffic on a single lane road
- Assume coefficient of friction as 0.37 and reaction time of driver as 2.5 seconds.
- Q.6 Give the names of various tests carried out on road aggregate. Explain aggregate impact test with the help of a neat diagram. [8]
- Q.7 Define permanent ways. Give ideal requirements of permanent way. Draw typical cross-section of a permanent way on Embankment. [8]

## PART – C

(Descriptive/Analytical/Problem Solving/Design Questions) [2×15=30]

Attempt any two questions

- Q.1 What are the desirable properties of a good bitumen? Write names of various tests carried out on bitumen. Explain Ductility test with the help of a diagram. [15]
- Q.2 (a) What are the basic requirements of Highway alignment? Explain the factors governing highway alignment. [7]
- (b) The design speed of highway is 80 kmph, there is a horizontal curve of radius 200m in a certain locality. Safe limit of transverse coefficient of friction is 0.15. [8]
- (i) Calculate the super elevation required to maintain this speed.
- (ii) If the maximum super-elevation of 0.07 is not to be exceeded, calculate the maximum allowable speed on this horizontal curve as it is not possible to increase the radius.
- Q.3 (a) Give differences between WBM Roads and WMM Roads. [7]
- (b) Explain various types of Road Rollers used for compaction during road construction. [8]
- Q.4 Explain CBR Test for evaluating the stability of flexible pavement with the help of a neat diagram. Also give limitation of CBR Test with respect to soil properties. [15]
- Q.5 (a) Define terminal area. Write about factors affecting site selection of Airport. [7]
- (b) Give advantages & disadvantages of various types of sleepers used in Railway construction. [8]
-