

Roll No. ....

**3202**

**B. Tech. 5th Semester (Civil Engg.)  
Examination – December, 2022**

**HIGHWAY ENGINEERING - I**

**Paper : PCC-CE-303-G**

**Time : Three Hours ] [ Maximum Marks : 75**

*Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.*

**Note :** Attempt *five* questions in all, selecting *one* question from each Section. Question No. 1 is *compulsory*.

All questions carry equal marks.

1. (i) What is central road fund ?
- (ii) Explain with neat sketch the "PIEV" theory ?
- (iii) What is the significance of CBR test ?
- (iv) How is design hourly volume determined ?
- (v) Define the term "Pavement Serviceability Index" with its importance.

3202-1500-(P-3)(Q-9)(22)

P. T. O.

(vi) Differentiate between "Geo-Textiles and Geo-Membrane" in highway construction.

#### SECTION - A

2. (i) What are the various classification of roads ?  
(ii) State to explain the general points which need to be considered for ideal location of highways.
3. (i) What is the significance of Soil Suitability Analysis and Road Ecology in highway planning.  
(ii) What are the conditions which necessitate taking up of an alignment project of the highway.

#### SECTION - B

4. The speeds of overtaking and overtaken vehicles are 80 and 60 kmph respectively. If the acceleration of the overtaking vehicles is 2.5 kmph per second. Calculate the safe passing sight distance for (i) one-way traffic (ii) two-way traffic.
5. State the objects of widening pavements on horizontal curves ? What are the factors on which the design of widening depends ? Explain.

3202- (P-3)(Q-5)(22) ( 2 )

#### SECTION - C

6. Write in details the different types of tests to be conducted to check the suitability of Aggregate Materials in highway materials.
7. What are the modern construction materials used for the construction of pavements ? Explain their characteristics and usage in detail.

#### SECTION - D

8. (i) Explain the various aspects investigated during parking studies. What are the uses of these studies ?  
(ii) What are the factors on which PCU values depends ?
9. (i) Explain the data collection technique for ITS Detectors.  
(ii) Explain in brief :  
(a) Geographic Information System  
(b) Automatic Vehicle Identification

3202- (P-3)(Q-9)(22) ( 3 )