

Code No: RT31015

**R13****SET - 1**

**III B. Tech I Semester Supplementary Examinations, May-2018**  
**TRANSPORTATION ENGINEERING – I**  
(Civil Engineering)

Time: 3 hours

Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)  
2. Answering the question in **Part-A** is compulsory  
3. Answer any **THREE** Questions from **Part-B**

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**PART -A**

- |   |                                                              |      |
|---|--------------------------------------------------------------|------|
| 1 | a) What is the necessity of highway planning?                | [3M] |
|   | b) Write about highway cross sectional elements?             | [4M] |
|   | c) Write about PCU factors.                                  | [4M] |
|   | d) What are highway materials? Explain.                      | [3M] |
|   | e) Write about various types of pavements.                   | [4M] |
|   | f) What is Overlay? Discuss about various types of Overlays. | [4M] |

**PART -B**

- |   |                                                                                                                                                                                              |      |
|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| 2 | a) Write about various road patterns?                                                                                                                                                        | [4M] |
|   | b) Compare Nagpur & Bombay Road development plans?                                                                                                                                           | [8M] |
|   | c) What are the differences between good and improper alignment?                                                                                                                             | [4M] |
| 3 | a) Discuss the design factors of horizontal alignment.                                                                                                                                       | [3M] |
|   | b) Calculate the safe stopping distance for design speed of 50kmph for two-way traffic on a two lane road. Assume coefficient of friction as 0.35 and reaction time of driver as 2.5seconds. | [8M] |
|   | c) The design speed of highway is 90kmph and radius R=200m. Check for safety.                                                                                                                | [5M] |
| 4 | a) Discuss the relation between parameters of Traffic-Volume, Speed and Density.                                                                                                             | [8M] |
|   | b) Discuss the guidelines of IRC method of Signals.                                                                                                                                          | [8M] |
| 5 | a) Write about Aggregate Impact Test.                                                                                                                                                        | [8M] |
|   | b) Write about Marshall Mix Design.                                                                                                                                                          | [8M] |
| 6 | a) Compare various aspects of flexible and rigid pavement.                                                                                                                                   | [8M] |
|   | b) Calculate the stresses at the corner and edge regions of a cement concrete pavement using westerguard equations with the following data.                                                  | [8M] |
|   | • Radius of relative stiffness (l)=20cm                                                                                                                                                      |      |
|   | • Wheel load (P)=4500 kg                                                                                                                                                                     |      |
|   | • Modulus of elasticity of cement concrete (E) = $3 \times 10^5$ kg/cm <sup>2</sup>                                                                                                          |      |
|   | • Pavement thickness (h) =18cm                                                                                                                                                               |      |
|   | • Modulus of sub grade reaction (k)=6.0 kg/cm <sup>3</sup>                                                                                                                                   |      |
|   | • Radius of contact area (a)=15cm                                                                                                                                                            |      |
| 7 | a) Write the construction process of bitumen pavement.                                                                                                                                       | [8M] |
|   | b) Discuss about various failures of rigid pavements                                                                                                                                         | [8M] |

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