

B.Tech III Year II Semester (R15) Regular Examinations May/June 2018  
**TRANSPORTATION ENGINEERING – I**  
 (Civil Engineering)

Time: 3 hours

Max. Marks: 70

**PART – A**  
 (Compulsory Question)

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- 1 Answer the following: (10 X 02 = 20 Marks)
- Explain briefly about star and grid pattern of road network.
  - What are the different phases of highway engineering?
  - What are the factors to be considered for providing camber?
  - Discuss about grade compensation and critical length of grade in highways.
  - Explain the use of 30<sup>th</sup> hourly volume.
  - The time for covering a stretch of 200 m by ten vehicles in seconds are 12, 11, 13, 14.3, 15.5, 12.5, 12, 1.2, 14.1 and 13.6. Compute time mean speed and space mean speeds.
  - What should be the criteria for selecting width of weaving section in rotary design as per IRC?
  - What are the advantages of one way traffic?
  - Explain the functionality of dowel bars in rigid pavements.
  - List out the parameters required for computing Group Index of a soil.

**PART – B**  
 (Answer all five units, 5 X 10 = 50 Marks)

**UNIT – I**

- Explain the functional classification of highways.
- Explain the role of reconnaissance survey in finalizing highway alignment.

OR

- 3 What are the guide lines given by third road development plan for finalizing different types of highways?

**UNIT – II**

- 4 Design the length of a horizontal transition curve for a two lane National highway having a radius of 300 m and for a design speed of 100 kmph for a rolling terrain. The average length of rigid base of vehicle is considered as 6 m. Take coefficient of lateral friction 0.38.

OR

- 5 Derive an expression for extra widening on highway curves and also explain method of introducing extra widening.

**UNIT – III**

- 6 Explain briefly about various O-D studies and the importance of desire lines.

OR

- 7 What is level of service and give the factors influencing level of service?

**UNIT – IV**

- 8 Explain the advantages and disadvantages of grade separated intersection.

OR

- 9 What are the different corrections to be applied in estimating rotary capacity?

**UNIT – V**

- 10 Explain the functionality of various layers in flexible pavements.

OR

- 11 Discuss about the critical combination of stresses to be considered in the design of rigid pavements.

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