

7E7064

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B. Tech. VII Sem. (Main/Back) Exam., Nov. – Dec. - 2017

Civil Engineering

7CE4A Transportation Engineering-II

Time: 3 Hours

Maximum Marks: 80  
Min. Passing Marks: 26

*Instructions to Candidates:*

*Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing 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

### UNIT-I

- Q.1 (a) List out the various gauges prevailing in India with their gauge widths. What factors govern the selection of a suitable gauge? Discuss. [8]
- (b) Give brief description of 'CST – 9 sleeper' with neat sketch. [8]

OR

- Q.1 (a) Briefly explain the different types of rails, their advantages and disadvantages. [8]
- (b) What are the various theories that have been put forward to explain the development of creep? Describe wave motion theory. [8]

## UNIT-II

- ~~Q.2~~ (a) Draw a neat sketch of a right – hand turnout and list the principal components & terms connected with its layout. [8]
- (b) Distinguish between elevated and underground railway systems. Also enumerate the factors that favour the selection of one over the other. [8]

### OR

- Q.2 (a) What are the salient features of the Jaipur metro railway? [6]
- (b) Write short note on – [5×2=10]
- Number of crossing.
  - Spring or Movable Crossing.
  - Length of Tongue Rail & Stock rail.
  - Switch Angle.
  - Flange way Clearance.

## UNIT-III

- ~~Q.3~~ (a) A 8° curve track diverges from a main curve of 5° in the opposite direction. In the layout of a BG yard, calculate the super elevation and the speed on the branch line when the maximum speed permitted on the main line is 45 kmph. [10]
- (b) What is negative cant? Under what circumstances its use is an obligation? [6]

### OR

- Q.3 (a) Explain the objective of providing transition curves on either side of a circular curve. [6]
- (b) Calculate the length of the vertical curve between two gradients meeting in a summit, one rising at a rate of 1 in 100 and the other falling at a rate of 1 in 200. [10]

## UNIT-IV

- ~~Q.4~~ (a) At an airport site at sea level with standard atmospheric conditions, the runway lengths required for take off and landing are 2000m & 2400m respectively. The proposed airport is situated at an altitude of 150m. If the airport reference temperature is 25°C and if the effective runway gradient is 0.35%, calculate the length of runway to be provided. [10]
- (b) What are the factors which influence the airport site selection? [6]

### OR

- Q.4 (a) Define Wind Rose diagram. Also briefly explain any one method of orientation of runway with the help of necessary sketch. [10]
- (b) Write short note on – [3×2=6]
- Corrections to basic Runway Length.
  - Airport classifications.

## UNIT-V

- ~~Q.5~~ (a) Write detailed note on Westergaard's method for design of rigid pavement for runway. [8]
- (b) What are the different factors which affect pavement design? [8]

### OR

- Q.5 (a) What are the different methods for designing flexible airport pavements? [8]
- (b) Write detailed note on the effect of jet aircraft characteristics on Airport pavement design. [8]