

**II B. TECH II SEMESTER REGULAR EXAMINATIONS, AUGUST 2021  
TRANSPORTATION ENGINEERING**

(Civil Engineering)

Time: 3 hours

Max. Marks: 60

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Note: Answer **ONE** question from each Unit (**5 × 12 = 60 Marks**)

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## UNIT - I

1. a) Briefly outline the highway development in India also write it's any two practical examples. [6M]
- b) While aligning a highway in a built up area, it was necessary to provide a horizontal circular curve of radius 280 m. The design speed is 85 Kmph, the length of wheel base is 6 m and the pavement width is 12m. Design super elevation, extra widening and length of transition curve [6M]

(OR)

2. a) Explain obligatory points with sketches; discuss how these control the alignment? [6M]
- b) Explain about Highway cross sectional elements. [6M]

## UNIT – II

3. a) List the factors affecting capacity and level of service. [6M]
- b) Explain with a neat diagram, the various design elements of a rotary type intersections. How the capacity of a rotary is determined? [6M]

(OR)

4. a) Explain the vehicular factors that influence road accidents. Explain the procedure for collection of accident data. [6M]
- b) Elaborate the traffic problems in urban areas and give their regulatory measures. [6M]

## UNIT – III

5. a) Write about Marshall Mix Design to find optimum bitumen content. [6M]
- b) Specify the material required for construction procedure of WBM roads. What are the uses and limitations of WBM roads. [6M]

(OR)

6. a) Define CBR. Give test procedure to determine CBR. [6M]
- b) what are the different types of joints which are used in construction of cement concrete pavement? [6M]

## UNIT –IV

7. a) Describe the step by step procedure of design of flexible pavements as per IRC 37-2001. [6M]

- b) Calculate the spacing of expansion joint from the following data: [6M]  
Maximum joint width = 2cm  
Temperature of laying concrete = 20<sup>0</sup>c  
Maximum slab temperature expected = 55<sup>0</sup>c  
Coefficient of thermal expansion = 10\*10<sup>-6</sup> per <sup>0</sup> C

(OR)

8. a) What is “ESWL”? How is it determined and used in pavement design [6M]  
b) Explain types of joints used in Rigid pavements and their function. [6M]

UNIT –V

9. a) Describe the functions and requirements of ballast [6M]  
b) A 8<sup>0</sup> curve diverges from a main curve of 5<sup>0</sup> in an opposite direction in the layout of a BG yard, calculate the super elevation and speed on the branch line, if the maximum speed permitted on the main line is 50 km.p.h. [6M]

(OR)

10. a) Discuss wave theory and percussion theory with respect to creep of rails. [6M]  
b) What is the equilibrium cant on a 2<sup>0</sup> curve on a BG track, if the speed of various trains are 10 trains at 50km.p.h., 8 trains at 55 km.p.h. and 4 trains at 60km.p.h. respectively [6M]

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