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Roll No. :

320554(20)

B. E. (Fifth Semester) Examination, Nov.-Dec. 2021

(New Scheme)

(Civil Engg. Branch)

TRANSPORTATION ENGINEERING–II

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : Attempt all questions. Part (a) from each question is compulsory. Attempt any two parts from (b), (c) and (d) of each question.

Unit-I

1. (a) Define sleeper density.

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- (b) Discuss the necessity and effects of coning of wheels and tilting of rails. 7
- (c) Define creep of rail. What are their effects? 7
- (d) Write short notes on :
- (i) Welding of rails
 - (ii) CST9 sleepers
- 7

Unit-II

2. (a) What are the functions of points and crossing in railway track layout? 2
- (b) Explain the necessity of gradients? Discuss all the types of gradients adopted an Indian Railways. 7
- (c) From a main line curve of 4° on a BG track, a branch line of 6° diverges in opposite direction. If the maximum speed permitted on main line is 70 km/h. Calculate the super elevation and maximum speed on branch line. 7
- (d) Calculate the elements of a turnouts, when it is given $G = 1.676$ m, $N = 12$, $d = 13.3$ cm and angle of switch $1^\circ 8' 0''$. 7

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Unit-III

3. (a) Define linear waterway. 2
- (b) A bridge is proposed to be constructed across an alluvial stream carrying a discharge of $300 \text{ m}^3/\text{sec}$. Assuming the value of silt factor = 1.1, determine the maximum scour depth when the bridge consists of :
- (i) Two spans of 35 m each
 - (ii) Three span of 30 m each
- 7
- (c) Explain the following : 7
- (i) Economic span
 - (ii) Depth of foundation
 - (iii) Alignment of bridge
- (d) What consideration are to be taken for the selection of a bridge? 7

Unit-IV

4. (a) What is necessity of tunnel? 2
- (b) What is ventilation of tunnels? What is its necessity? Explain various methods of ventilation of tunnels. 7

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(c) Describe the one method of tunneling in hard rock with advantages. 7

(d) What is drainage of tunnels? What is its necessity? 7

Unit-V

5. (a) Define Light House. 2

(b) Enumerate the facilities provided at major harbour to make it a big commercial port. 7

(c) Draw the diagram of harbour layout and described in details. 7

(d) What are the functions of a breakwater? What are the different types of breakwater? 7