Roll No.												

PRESIDENCY UNIVERSITY

BENGALURU

End - Term Examinations – MAY/ JUNE 2025

Date: 04-06-2025 **Time:** 01:00 pm – 04:00 pm

School: SOE	**Program:** B.Tech Civil Engineering	
Course Code : CIV2022	**Course Name:** Railway Engineering and Tunneling	
Semester: IV	**Max Marks**: 100	**Weightage**: 50%

CO - Levels	CO1	CO2	CO3	CO4	CO5
Marks	14	24	36	26	

Instructions:

(i) Read all questions carefully and answer accordingly.

(ii) Do not write anything on the question paper other than roll number.

Part A

Answer ALL the Questions. Each question carries 2marks. **10Q x 2M=20M**

1.	Mention any two functions of ballast.	2 Marks	L1	CO1
2.	What is creep in rails?	2 Marks	L1	CO1
3.	Define cant deficiency.	2 Marks	L1	CO2
4.	What do you mean by negative superelevation?	2 Marks	L1	CO2
5.	Define a turnout.	2 Marks	L1	CO3
6.	What is the heel divergence in a switch?	2 Marks	L1	CO3
7.	Define flangeway clearance.	2 Marks	L1	CO3
8.	Define a tunnel and an open cut.	2 Marks	L1	CO4
9.	What is meant by muck removal?	2 Marks	L1	CO4
10.	What are the sources of water in tunnels?	2 Marks	L1	CO4

Part B

Answer the Questions. **Total Marks 80M**

11.	a.	Discuss the different types of rail wear.	5 Marks	L2	CO1
	b.	Differentiate between wooden and concrete sleepers.	5 Marks	L2	CO1
		Or			
12.	a.	Describe the various forces acting on railway tracks.	10 Marks	L2	CO1

13.	a.	Write a short note on grade compensation on curves for BG tracks.	**5 Marks**	**L2**	**CO2**
	b.	Explain how centrifugal force is counteracted on curved tracks.	**5 Marks**	**L2**	**CO2**
		Or			
14.	a.	A train weighing 800 tonnes moves on a 3° curve on a BG track with a ruling gradient of 1 in 250. Calculate the compensated gradient.	**5 Marks**	**L2**	**CO2**
	b.	Write a short note on negative superelevation.	**5 Marks**	**L2**	**CO2**

15.	a.	Explain various types of gradients used in railway geometric design with examples.	**10 Marks**	**L2**	**CO2**
		Or			
16.	a.	Calculate the superelevation and maximum permissible speed for a 4° BG curve on a route with a maximum sanctioned speed of 70 km/h. The speed for equilibrium superelevation is 55 km/h and the booked speed of goods trains is 45 km/h.	**10 Marks**	**L2**	**CO2**

17.	a.	Explain the components of a split switch with a neat sketch.	**5 Marks**	**L2**	**CO3**
	b.	With neat sketches, explain all the components of points and crossings and their functions.	**10 Marks**	**L2**	**CO3**
		Or			
18.	a.	Describe the types of track junctions used in railway yards.	**5 Marks**	**L2**	**CO3**
	b.	Describe the various train resistances encountered during motion and explain their impact on tractive power.	**10 Marks**	**L2**	**CO3**

19.	a.	Explain the resistance due to curvature and gradient in train movement.	**5 Marks**	**L2**	**CO3**
	b.	Explain with examples and sketches the different types of railway yards and their functions in handling traffic.	**10 Marks**	**L2**	**CO3**
		Or			
20.	a.	Briefly describe the classification of yards in Indian Railways.	**5 Marks**	**L2**	**CO3**
	b.	Explain the types of track junctions with suitable diagrams. Mention their functional purpose and use cases.	**10 Marks**	**L2**	**CO3**

21.	a.	Explain the necessity of tunnels in urban, mountainous, and underwater environments. Support your answer with relevant applications.	**10 Marks**	**L2**	**CO4**
	b.	With neat sketches, explain the various shapes of tunnels and specify where each type is preferred.	**10 Marks**	**L2**	**CO4**
		Or			
22.	a.	Explain tunnel ventilation – both temporary and permanent systems – along with methods of dust prevention and lighting.	**10 Marks**	**L2**	**CO4**
	b.	Describe the process of setting out a tunnel. Include both surface and underground methods.	**10 Marks**	**L2**	**CO4**