

Code: 20CE4702B

**IV B.Tech - I Semester – Regular / Supplementary Examinations  
OCTOBER 2024**

**RAILWAY AND HARBOR ENGINEERING  
(CIVIL ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

Note: 1. This paper contains questions from 5 units of Syllabus. Each unit carries 14 marks and have an internal choice of Questions.

2. All parts of Question must be answered in one place.

BL – Blooms Level

CO – Course Outcome

			BL	CO	Max. Marks
<b>UNIT-I</b>					
1	a)	Define permanent way. What are the ideal requirements of permanent way?	L1	CO1	7 M
	b)	With the help of a neat sketch, show the various components of a typical Railway track.	L3	CO1	7 M
<b>OR</b>					
2	a)	Explain about functions of rails.	L1	CO1	7 M
	b)	Draw a typical single line railway track in cutting and embankment showing full details.	L3	CO1	7 M
<b>UNIT-II</b>					
3	a)	What is Ballast? What are the different types and enumerate the requirements of Good ballast?	L2	CO2	7 M

	b)	Calculate the super elevation and maximum permissible speed for a 40° curve on main line with BG section with a maximum allowable speed of 90 kmph. Assume the equilibrium speed to be 60 kmph on branch line for 30° curve.	L3	CO2	7 M
<b>OR</b>					
4	a)	What are the functions of sleepers in a railway track? What are the requirements of a good sleeper?	L2	CO2	7 M
	b)	Discuss the merits and demerits of the following types of sleepers. i. Concrete sleepers. ii. Cast iron sleepers.	L2	CO2	7 M
<b>UNIT-III</b>					
5	a)	Explain the functions of points and crossings.	L3	CO3	7 M
	b)	What is automatic block system of controlling train movements? Explain the working principle of automatic block system.	L3	CO3	7 M
<b>OR</b>					
6	a)	Explain about station yard types.	L3	CO3	7 M
	b)	Draw a neat sketch of left hand turnouts.	L3	CO3	7 M
<b>UNIT-IV</b>					
7	a)	Explain briefly about International Civil Aviation Organization.	L3	CO4	7 M

	b)	Write any seven requirements of an ideal Airport location? Explain.	L2	CO4	7 M
<b>OR</b>					
8	a)	Explain in detail about importance of Runway Lighting.	L3	CO4	7 M
	b)	Explain in detail about Runway and Taxiway markings.	L3	CO4	7 M
<b>UNIT-V</b>					
9	a)	What are the factors to be considered for the selection of harbors on a sandy coast and lower reach of a river?	L2	CO5	7 M
	b)	Differentiate between a Pier and a Wharf. State the conditions under which you will prefer their construction.	L3	CO5	7 M
<b>OR</b>					
10	a)	What are the requirements of good port?	L2	CO5	7 M
	b)	Write in detail about working principle of a light house with a neat sketch.	L3	CO5	7 M