

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 |
|----------------|----|---|----|-----|------------|
| UNIT-I | | | | | |
| 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 |
| OR | | | | | |
| 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 |
| UNIT-II | | | | | |
| 3 | a) | What is Ballast? What are the different types and enumerate the requirements of Good ballast? | L2 | CO2 | 7 M |

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|-----------------|----|--|----|-----|-----|
| | 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 |
| OR | | | | | |
| 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 |
| UNIT-III | | | | | |
| 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 |
| OR | | | | | |
| 6 | a) | Explain about station yard types. | L3 | CO3 | 7 M |
| | b) | Draw a neat sketch of left hand turnouts. | L3 | CO3 | 7 M |
| UNIT-IV | | | | | |
| 7 | a) | Explain briefly about International Civil Aviation Organization. | L3 | CO4 | 7 M |

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|---------------|----|---|----|-----|-----|
| | b) | Write any seven requirements of an ideal Airport location? Explain. | L2 | CO4 | 7 M |
| OR | | | | | |
| 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 |
| UNIT-V | | | | | |
| 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 |
| OR | | | | | |
| 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 |