

6. (a) What do you understand by interlocking in a railway system? Write in brief. 10
 (b) Discuss about the modernization of railways and its future trends. 10
7. (a) Mention the objectives of signaling. How are signals classified? Mention the functions of each signal. 10
 (b) What are the functions of a Marshalling yard? Write in brief about Flat and Graviation yard. 10
8. (a) What are the functions of a railway station? Explain briefly the various requirements of a railway station at an important city. 10
 (b) Discuss in details about the control of train movements. Also write about railway signals. 10

3. (a) Explain the functions and requirements of ideal ballast materials with respect to the ballast used on Indian Railways. 10
 (b) Briefly describe the various elastic fastening being used on Indian Railways. 10
4. (a) Differentiate between the following : 10
 (i) Dig spike and Screw spike
 (ii) Ordinary fish plate and combined fish plate
 (b) Describe points and crossing and their types. Also explain its design approaches. 10
5. (a) A turnout is to be laid off a straight BG track with a 1 in 12 crossing. Determine the lead and radius of the turnout with the help of the following data : Heel divergence (d) = 130 mm, Crossing angle (α) = $4^{\circ}35'49''$, Switch angle (β) = $1^{\circ}50'$, Straight length between the theoretical nose of crossing and the tangent point of crossing (h) = 1.410 m. 10
 (b) Describe the main constituents of a crossing. Draw neat sketches to show a point rail and splice rail. 10

Roll No.

23281

**M. Tech. 2nd Semester (Civil Engg.)
(Transportation Engg.) (Elective-IV)
Examination – June, 2023**

ADVANCED RAILWAY ENGINEERING

Paper : CE-649

Time : Three hours]

[Maximum Marks : 100

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt five questions in all. All questions carry equal marks.

1. (a) It is observed that at present tracks, are mostly laid with flat-footed rails. Give reasons for this preference in relation to other types of rails sections. 10
- (b) Describe various railway track components along with neat diagram. 10
2. (a) List various types of sleepers used on Indian Railways. Which one would you consider to be the best for modern tracks and why? 10

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