

5TH SEM./ CIVIL / 2022(W)

Th-3 Railway & Bridge Engineering

Full Marks: 80

Time- 3 Hrs

Answer any five Questions including Q No.1& 2.
Figures in the right hand margin indicate marks.

1. **Answer All questions.** 2 x 10
 - a. Define railway gauge. Name the types of railway gauge used in Indian Railways.
 - b. Define sleepers. Write down the types of sleepers used in railways.
 - c. Define creep of rails. Mention two causes of creep in rails.
 - d. Name the types of gradients provided in railway track.
 - e. What is the need of points and crossings in railway track? Define check rails.
 - f. Define railway yards and classify them.
 - g. Differentiate between bridge and culvert.
 - h. Define afflux and free board in bridges.
 - i. What is cofferdam? Mention its two uses.
 - j. Define wing walls and classify them.
2. **Answer Any Six Questions.** 6 x 5
 - a. Define permanent way. Write down the requirements of ideal permanent way.
 - b. Write down the functions of rails. Briefly explain the types of rail sections used in railway track along with neat sketches.
 - c. Define superelevation. Write down the functions of superelevations in railways.
 - d. Briefly explain the factors responsible for site selection of a railway station.
 - e. Draw the figure showing constituents of a right -hand turn out and label it neatly.
 - f. Write down the site characteristics of an ideal bridge.
 - g. Define caissons .Briefly explain different types of caissons along with their uses.
3. Define ballast. Write down functions and classification of ballast. Also mention the characteristics of good ballast. 10
4. What are the requirements of rail joints ? Discuss different types of rail joints with the help of neat sketches and mention their merits and demerits. 10
5. What are the essentials of track maintenance? Briefly explain the procedure of track maintenance along with its advantages. 10
6. Define piers of bridges and their functions. Draw the cross sectional shapes of piers. Explain different types of piers. 10
7. Define causeway. Explain the necessities and classification of causeways. Mention the conditions to be satisfied for providing causeways. 10