

**5<sup>TH</sup> SEM. /CIVIL/ 2023(W) NEW**

**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 indicates marks.

1. Answer **All** questions 2 x 10
  - a. Define creep of rails.Mention two causes of creep in rails.
  - b. Name the types of gradients provided in railway track.
  - c. Differentiate between B.G and M.G.
  - d. Explain equilibrium cant.
  - e. What do you mean by crossing?
  - f. Differentiate between bridge and culvert.
  - g. Define afflux.
  - h. What do you mean by coffer dam?
  - i. What is free board?
  - j. Differentiate between square and skew alignment.
2. Answer **Any Six** Questions 6 x 5
  - a. Write down the functions of sleeper?
  - b. Describe the requirement of good ballast in laying of rails.
  - c. Write the component of permanent way with neat sketch?
  - d. What are the characteristics of an ideal bridge site?
  - e. Explain the necessity and procedure of track maintenance.
  - f. Explain relationship of e,G,V,R on superelevation.
  - g. Discuss the theories of creep.
3. What are the requirements of rail joints &Write down different types of rail joints with the neat sketches? 10
4. Draw the figure showing constituents of a right hand turn out and label it neatly. 10
5. Explain various types of crossing in use on Indian railways. 10
6. Define cassion.Briefly explain the different types of cassion along with their uses. 10
7. Mention and Explain the general principles of the design of bridge foundations. 10