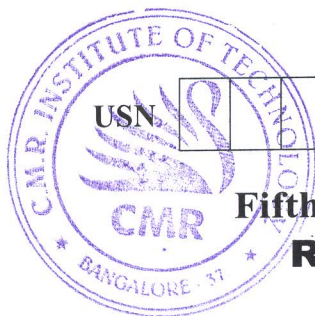


# CBCS SCHEME

15CV552



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## Fifth Semester B.E. Degree Examination, Dec.2023/Jan.2024 Railways, Harbour, Tunneling and Airports

Time: 3 hrs.

Max. Marks: 80

*Note: Answer any FIVE full questions, choosing ONE full question from each module.*

### Module-1

- State the relative merits and demerits of flat footed rails and bull headed rails. (08 Marks)
  - Define creep. What are the causes, effects and prevention of creep? (08 Marks)

OR

- Briefly explain the advantages and disadvantages of any four types of ballast. (08 Marks)
  - If a 6 degree curve track branches off from a main 4 degree curve in an opposite direction in the layout of a B.G yard, calculate the super elevation and the speed on the branch line if the maximum speed on the main line is restricted to 45 km.ph. (08 Marks)

### Module-2

- List the modern surveying techniques that can be utilized for preliminary survey of railway line for difficult terrain. Explain any two techniques. (06 Marks)
  - Explain tier system of track maintenance. (10 Marks)

OR

- What are the advantages and limitations of underground railways? (08 Marks)
  - For a rail of 11.89m length, calculate the quantity of materials required per km. Length of track. Assume sleeper density to be equal to  $(1.0936n + 4)$ . (08 Marks)

### Module-3

- Define the terms harbor, give the classification of harbor. (06 Marks)
  - What are factors to be considered while selecting a site for a harbor? (06 Marks)
  - What is breakwater? List the factors used for selecting the type of break water. (04 Marks)

OR

- What is tunnel, mention its advantages. (04 Marks)
  - Briefly explain with a neat sketch the needle beam method of tunneling. (06 Marks)
  - Write a short notes on:
    - Tunnel lining
    - Tunnel drainage. (06 Marks)

### Module-4

- What is regional planning? What information will the regional plan provide? Explain the various data to be collected for a scientific and sound regional plan. (08 Marks)
  - Briefly explain the various classification of airport. (08 Marks)

OR

- 8 a. With a neat typical layout of an airport, explain its components. (08 Marks)  
 b. List the factors to be considered while selecting a suitable site for an airport and explain how noise nuisance is tackled. (08 Marks)

Module-5

- 9 a. What is wind rose diagram? Explain briefly with a neat sketch any one method of orientation of runway. (06 Marks)  
 b. Calculate actual length of runway from following data:  
 (i) Airport elevation = R.L. 105m  
 (ii) Airport reference temperature = 30°C  
 (iii) Runway basic length = 1200 m  
 (iv) Highest point along length = R.L. 107m  
 (v) Lowest point along length = R.L. 101m. (10 Marks)

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OR

- 10 a. Explain the following :  
 (i) Airport marking (ii) Airport lighting (08 Marks)  
 b. Explain principles adopted in design of an exit taxiway connecting runway and a parallel taxiway. On a neat typical layout, indicate various design elements. (08 Marks)

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