

# CBCS SCHEME



18CV645

## Sixth Semester B.E. Degree Examination, Jan./Feb. 2023 Railways, Harbour, Tunneling and Airports

Time: 3 hrs.

Max. Marks: 100

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

### Module-1

- 1 a. With a neat sketch of permanent way cross section, explain the function of its components. (10 Marks)
- b. If a  $6^\circ$  curve track branches off from a main  $4^\circ$  curve in an opposite direction in a layout of B.G. yard, calculate the superelevation and the speed on the branch line if the maximum speed on the main line is restricted to 45 kmph. (10 Marks)

OR

- 2 a. With a neat sketch, explain the Coning of wheels. Also, mention any two advantages of it. (10 Marks)
- b. Draw a neat sketch of simple right hand turnout and show its various components. Also, explain the working principle of the turnout. (10 Marks)

### Module-2

- 3 a. Discuss in detail about modern methods of track maintenance. (10 Marks)
- b. Estimate the quantities of materials required per km length of B.G track. Given weight of rail per metre as  $45 \times 10^{-2}$  kN/m, length of rail as 12.8m, sleeper density =  $(n + 5)$ . (10 Marks)

OR

- 4 a. Enumerate the different types of station yards. With a neat sketch, explain Marshaling yard. (10 Marks)
- b. Enumerate and explain the methods of stabilization of track on poor soil. (10 Marks)

### Module-3

- 5 a. Classify the types of harbour and explain the natural phenomena considered in the design of harbor. (10 Marks)
- b. Explain: (i) Tunnel Lighting (ii) Tunnel Ventilation (10 Marks)

OR

- 6 a. Enumerate and explain different types of breakwaters. (10 Marks)
- b. With a neat sketch, explain Needle beam method of tunneling. (10 Marks)

### Module-4

- 7 a. Sketch a typical airport layout and explain the function of its components, (10 Marks)
- b. Discuss on the classification of Airports. (10 Marks)

OR

- 8 a. Explain the factors considered in the selection of site for airport. (10 Marks)
- b. Write short notes on:
  - i) Air transport characteristics
  - ii) Parking and circulation area (10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

**Module-5**

- 9 a. The length of runway under standard condition is 1620m. The airport site has an elevation of 270m. Its reference temperature is 32.94°C. If the runway is to be constructed with an effective gradient of 0.2 percent, determine the corrected runway length. (10 Marks)
- b. What is wind rose diagram? With a neat sketch explain any one method of orientation of runway. (10 Marks)

**OR**

- 10 a. Design an exit taxiway joining a runway and a parallel main taxiway. The total angle of turn is 30° and the turnoff speed is 80 kmph. Draw a neat sketch and show all the design elements. (10 Marks)
- b. Explain  
(i) Airport Lighting  
(ii) Airport Marking (10 Marks)

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