



CBCS SCHEME

21CV643

Sixth Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025 Railways, Harbors, 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. Briefly explain the advantages of railways. (10 Marks)
- b. Briefly explain the difference between flat-footed rails and bull-headed rails. (10 Marks)

OR

- 2 a. Briefly explain the requirements of an ideal permanent way with neat figure. (10 Marks)
- b. Briefly explain the functions and requirements of sleepers. (10 Marks)

Module-2

- 3 a. Briefly discuss the stabilization method of railway track. (10 Marks)
- b. Calculate the materials required for BG – Track of length 1.2 km. (10 Marks)

OR

- 4 a. Briefly explain the purpose of railway station. Explain crossing station with neat loop diagram. (10 Marks)
- b. Discuss briefly about marshalling yards and explain its different types. (10 Marks)

Module-3

- 5 a. Briefly explain needle beam method of construction with neat sketch. (10 Marks)
- b. List and explain the facilities at a major harbour. (10 Marks)

OR

- 6 a. Briefly explain the components of harbor with neat sketch. (10 Marks)
- b. Briefly explain the common methods of tunnel lining. (10 Marks)

Module-4

- 7 a. List the various elements of an airport and explain them with a neat sketch. (10 Marks)
- b. Briefly explain the various classifications of airport. (10 Marks)

OR

- 8 a. List and briefly explain the aircraft characteristics. (10 Marks)
- b. Explain the various factors considered in selection of an airport site. (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. Explain the procedure for orienting runway using wind rose diagram type – I. (10 Marks)
 b. The length of a runway under standard conditions is 2100 m. The airport is to provide at an elevation of 410 m above the MSL. The airport reference temperature is 32°C. The construction plan provides the following data given below :

End to end of runway (m)	Grade (%)
0 to 300	+ 1.0
300 to 900	– 0.5
900 to 1500	+ 0.5
1500 to 1800	+ 1.0
1800 to 2100	– 0.5
2100 to 2700	– 0.4
2700 to 3000	– 0.1

Determine the length of runway. Apply corrections for elevation and temperature as per ICAO and for gradient as per FAA specification. (10 Marks)

OR

- 10 a. Briefly the types of runway configuration with neat figure. (10 Marks)
 b. Design an exit taxiway joining a runway and a parallel main taxiway. The total angle of turn is 30° and the turn off speed is 80 kmph. Draw a neat sketch and show there in all the design elements. (10 Marks)

* * * * *