CBCS SCHEME

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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)**

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)**

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