CBCS SCHEME

USN ☐☐☐☐☐☐☐☐☐☐

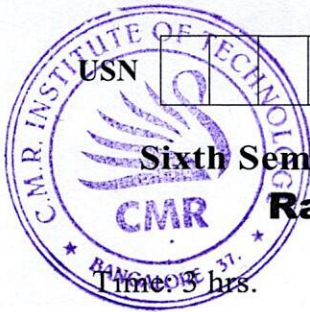## Sixth Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025
Railways, Harbors, Tunneling and Airports

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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