

# CBCS SCHEME



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15CV552

## Fifth Semester B.E. Degree Examination, July/August 2022 Railways, Harbours, Tunneling and Airports

Time: 3 hrs.

Max. Marks: 80

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

### Module-1

- 1 a. Draw a cross section of a permanent way in embankment and discuss in brief the basic functions of various components of a railway track. (10 Marks)
- b. What are the political, social and economical advantages of railways? (06 Marks)

OR

- 2 a. If a  $8^\circ$  curved track diverges from a main curve of  $5^\circ$  in an opposite direction, in the layout of the B.G. yard. Calculate the super elevation and speed on the branch line, if the maximum speed permitted on main line is 45 kmph. (08 Marks)
- b. Briefly explain various gradients used on railway tracks. (08 Marks)

### Module-2

- 3 a. Explain any three methods of soil stabilization of track on poor soil. (08 Marks)
- b. Calculate the quantity of materials required for the construction of B.G. track 19500 m length with the rail section of 52 kg/m and standard length of 13 m. Take sleeper density as  $(M + 4)$ . (08 Marks)

OR

- 4 a. What is Marshalling yard? Explain the functions of Marshalling yard with sketch. (08 Marks)
- b. Discuss the various purpose of a railway track. (08 Marks)

### Module-3

- 5 a. List the requirements of a good harbour. (08 Marks)
- b. Briefly explain the necessity of a tunnel. (08 Marks)

OR

- 6 a. Define the term harbour. Explain various classification of harbours. (08 Marks)
- b. With a neat sketch, explain the needle beam method of tunneling in soft soils. (08 Marks)

### Module-4

- 7 a. Explain the factors which influence selection of sites for an airport. (08 Marks)
- b. Briefly explain the air transport characteristics. (08 Marks)

OR

- 8 a. Draw the typical airport layouts for the basic runway configurations. (08 Marks)
- b. With a neat typical layout of an airport, explain its components. (08 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. What is Wind rose? Explain type I Wind rose diagram. (08 Marks)
- b. Determine the turning radius of the taxiway for a supersonic transport aircraft with the mean base 30 m and tread of main loading gear as 6m for design turning speed of 50 kmph. Assume coefficient of friction between type and pavement surface as 0.13 and width of taxiway pavement as 22.5 m. (08 Marks)

**OR**

- 10 a. Mention the factors governing the location of exit taxiways. (08 Marks)
- b. Calculate the actual length of runway from the following data: (08 Marks)
- (i) Airport elevation = 100 m
  - (ii) Airport reference temperature = 28°C
  - (iii) Basic runway length = 600 m
  - (iv) Highest point along the length = 98.2 m (R.L)
  - (v) Lowest point along the length = 95.2 m (R.L)

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