CBCS SCHEME

USN | | | | | | | | | |

15CV552

Fifth Semester B.E. Degree Examination, Jan./Feb. 2021
Railway, 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. What are requirements of the good ballast? Mention the different types of ballast used in permanent way. **(06 Marks)**

b. What is super elevation? List the objects of providing super elevation. **(04 Marks)**

c. Define crossing. Explain briefly types of crossing. **(06 Marks)**

OR

2 a. Briefly discuss the following fasteners:
i) Dog spikes
ii) Pandrol clip for concrete sleepers. **(05 Marks)**

b. Define creep. What are causes and effects of creep? **(06 Marks)**

c. With a neat sketch, explain briefly coning of wheels. **(05 Marks)**

Module-2

3 a. Calculate the quantity of materials required for the construction of BG track of length 1km with the rail section of 52kg/m and standard length of 13m. Take sleeper density as m+7. **(06 Marks)**

b. Briefly explain track tampers used in track maintenance. **(06 Marks)**

c. List the different types of yards briefly explain any one of them. **(04 Marks)**

OR

4 a. List the methods adopted for soil stabilization explain them in brief. **(06 Marks)**

b. Briefly discuss on:
i) Metro Rails
ii) Under ground rails. **(06 Marks)**

c. Give the essential requirements of track maintenance. **(04 Marks)**

Module-3

5 a. Define the terms harbor, give the classification of harbor. **(06 Marks)**

b. What are factors to be considered while selecting a site for a harbor? **(06 Marks)**

c. What is breakwater? List the factors used for selecting the type of break water. **(04 Marks)**

OR

6 a. What is tunnel, mention its advantages. **(04 Marks)**

b. Briefly explain with a neat sketch the needle beam method of tunneling. **(06 Marks)**

c. Write a short notes on:
i) Tunnel lining
ii) Tunnel drainage. **(06 Marks)**

Module-4

7 a. Explain the characteristic of an aircraft which affects the planning and design of airport. (06 Marks)
b. Explain the factors that influence the site selection for an airport. (06 Marks)
c. What are points considered for airport vehicular circulation and parking system. (04 Marks)

OR

8 a. What are the characteristic of an ideal airport layout? (06 Marks)
b. Sketch the typical layout of an airport for the following runway configuration:
i) Single Runway
ii) Two Intersecting Runway. (06 Marks)
c. What are objectives of the airport master plan according to FAA? (04 Marks)

Module-5

9 a. What are assumption made for basic Runway length. (05 Marks)
b. The length of runway under standard condition is 1620m. The airport site has an elevation of 270m. It reference temperature is 32.94°C. If the runway is to be constructed with an effective gradient of 0.20%, determine the corrected runway length. (06 Marks)
c. What are factors considered for location of exit taxiways? (05 Marks)

OR

10 a. Write a note on: Runway marking. (04 Marks)
b. Design an exit taxiway joining a runway and a parallel main taxiway. The total angle of turn is 30 degrees and the turnoff speed is 80kmph [Take R_1 = 731m for 80kmph]. (06 Marks)
c. What is Windrose diagram? Sketch the type-1 Windrose diagram. (06 Marks)

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