



CBCS SCHEME

17CV552

Fifth Semester B.E. Degree Examination, Aug./Sept.2020 Railways, Harbours, 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. Discuss the significance of the FOUR major modes of transportation. (06 Marks)
- b. Describe the requirements of an ideal permanent way. (07 Marks)
- c. An 8° branch curve diverges in an opposite direction from a 5° main curve in a BG yard. Determine the permissible speed on the branch line if the speed on the main line is restricted to 45 kmph. (07 Marks)

OR

- 2 a. Describe the indications of creep and effects of creep. (06 Marks)
- b. Describe the requirements of sleepers. (07 Marks)
- c. Describe the various types of gradients indicating the recommended values and conditions with examples. (07 Marks)

Module-2

- 3 a. Define plate laying, base and nail-head. Explain the operations in American method of plate laying. (06 Marks)
- b. List the various classes of stations. Describe block stations and draw a neat sketch of a class B station with 3 lines. (07 Marks)
- c. Describe a sump yard with a neat sketch. List the methods of stopping the rolling down wagons. (07 Marks)

OR

- 4 a. Estimate the quantities of materials required to construct 2 km length of BG railway track with a sleeper density of M+6. (06 Marks)
- b. Discuss the factors to be considered for selecting the site for a railway station. (07 Marks)
- c. Describe a marshalling yard with a neat sketch. (07 Marks)

Module-3

- 5 a. List the classification of harbours and draw a neat sketch of the layout of an artificial harbor with components. (10 Marks)
- b. Discuss the advantages and disadvantages of tunnels. (10 Marks)

OR

- 6 a. List the types of breakwaters and discuss the characteristics of mound breakwaters. (10 Marks)
- b. Explain the three systems of mechanical ventilation of Tunnels. (10 Marks)

Module-4

- 7 a. Discuss the advantages and limitations of air transport. (06 Marks)
- b. Draw a neat sketch of an airport with open parallel concept of runways and explain the functions of the components. (10 Marks)
- c. Describe the data to be collected for preparing a sand and scientific regional plan. (04 Marks)

OR

- 8 a. Discuss the importance of vehicular circulation and parking area at airports and list the points to be considered for an efficient system. (06 Marks)
- b. List the factors to be considered while selecting a suitable site for a major airport and explain the features of a preferential runway with sketches. (10 Marks)
- c. Draw a neat sketch of an airport with offset parallel concept of runway showing the components. (04 Marks)

Module-5

- 9 a. Explain (i) Cross wind component (ii) Wind coverage (iii) Calm period. (06 Marks)
- b. Determine the turning radius of the taxiway for operating a subsonic jet aircraft of wheel base 17.70m and tread of main gear 6.62m. Turning speed is 40 kmph. Airport is of type A. (06 Marks)
- c. Tabulate the summary of runway geometrics as per ICAO. (08 Marks)

OR

- 10 a. Explain the procedure of determining the best direction of orienting the runway as per Type-I wind rose diagram with assumed data. (06 Marks)
- b. List the assumed conditions under which basic runway length is determined. Explain the normal landing case. (06 Marks)
- c. The basic runway length required for a proposed airport is 1800 m. The airport site is at an elevation of 450 m above MSL. The monthly mean of average and maximum daily temperature for the hottest month of the year are 26°C and 38°C respectively. Determine the corrected length of runway required if the effective gradient is 0.22 percent. (08 Marks)
