

# CBCS Scheme

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15CV552

## Fifth Semester B.E. Degree Examination, Dec.2017/Jan.2018 Railways, Harbour, 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. State the relative merits and demerits of flat footed rails and bull headed rails. (08 Marks)  
b. Define creep. What are the causes, effects and prevention of creep? (08 Marks)

OR

- 2 a. Briefly explain the advantages and disadvantages of any four types of ballast. (08 Marks)  
b. If a 6 degree curve track branches off from a main 4 degree curve in an opposite direction in the layout of a B.G yard, calculate the super elevation and the speed on the branch line if the maximum speed on the main line is restricted to 45 km.ph. (08 Marks)

### Module-2

- 3 a. Estimate the quantities of materials required to construct one km long BG railway track taking the sleeper density as  $n + 7$ . (08 Marks)  
b. Explain briefly the various classification of a railway station. (08 Marks)

OR

- 4 a. Discuss the various requirements of mechanical maintenance of railway tracks. (08 Marks)  
b. With a neat sketch, explain "Marshalling yard". Also give the sketch of "Hump type marshalling yard". (08 Marks)

### Module-3

- 5 a. Draw a neat sketch of artificial harbour and explain the various components with one function of each. (08 Marks)  
b. What is the importance of tunnel ventilation? Explain the methods adopted for tunnel ventilation. (08 Marks)

OR

- 6 a. Write a brief note on commercial harbour, fishing harbour and refuge harbour. (08 Marks)  
b. With a neat sketch, explain the needle beam method of tunneling in soft soils. (08 Marks)

### Module-4

- 7 a. What is regional planning? What information will the regional plan provide? Explain the various data to be collected for a scientific and sound regional plan. (08 Marks)  
b. Briefly explain the various classification of airport. (08 Marks)

OR

- 8 a. With a neat typical layout of an airport, explain its components. (08 Marks)  
b. List the factors to be considered while selecting a suitable site for an airport and explain how noise nuisance is tackled. (08 Marks)

**Module-5**

- 9 a. What is basic runway length? Explain the various corrections to be applied to it. (08 Marks)  
b. A taxiway is to be designed for operating Boeing 707 - 320 which has the following characteristics. Determine the turning radius of the taxiway.  
Wheel base 17.70m  
Thread of main loading gear 6.62m  
Turning speed 40kmph  
Coefficient of friction between tire and pavement surface 0.13. (08 Marks)

OR

- 10 a. Explain the following :  
i) Airport marking (08 Marks)  
ii) Airport lighting.  
b. The length of runway under standard conditions is 1620m. The airport site has an elevation of 270m. Its reference temperature is 32.90°C. If the runway is to be constructed with an effective gradient of 0.20 percent, determine the corrected runway length. (08 Marks)

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