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10CV63

**Sixth Semester B.E. Degree Examination, Feb./Mar. 2022**  
**Transportation Engineering – II**

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions, selecting at least TWO full questions from each part.**

**PART – A**

- 1 a. Briefly explain the advantages of rail transportation. (08 Marks)  
b. Discuss the factors which govern the choice of a gauge. (06 Marks)  
c. Draw a typical cross section of a permanent way. Discuss in brief the basic function of the various components a permanent way. (06 Marks)
- 2 a. Enumerate the functions of sleepers. (06 Marks)  
b. Estimate the quantity of the materials required for 2.5km B.G track with a sleeper density of  $(M + 7)$ . (06 Marks)  
c. Calculate the maximum permissible train load that can be pulled by locomotive having four pairs of driving wheels carrying an axle load of 24 tonnes each. The train has to run at a speed of 80kmph on a straight level B.G. track. Also calculate the reduction in speed, if the train climbs gradient of 1 in 200. If the train climbs gradient with a  $2^\circ$  curve then what would be reduction in speed? Take  $\mu = 0.166$ . (08 Marks)
- 3 a. With a usual notation, derive the expression for super elevation for B.G, M.G and N.G track. (06 Marks)  
b. What are the objects of providing transition curve? Explain briefly the essential requirements of an ideal transition curves. (06 Marks)  
c. A  $5^\circ$  curve diverges from a  $3^\circ$  main curve in the layout of B.G. yard. If the speed of the branch line is restricted to 30kmph find out the speed on the main line. Allowable cant deficiency may be assumed as 7.6cm. (08 Marks)
- 4 a. What is a marshalling yard? Explain the functions of marshalling yard with neat sketch. (06 Marks)  
b. Explain the following with neat sketches:  
i) Water column ii) Turn table. (08 Marks)  
c. On a straight B.G track, turnout takes off at an angle of  $6^\circ 42' 35''$ . Design the turnout when the angle of switch is  $1^\circ 34' 27''$ , length of switch rail is 4.73m, heel divergence = 11.43cm and straight arm = 0.85m. (06 Marks)

**PART – B**

- 5 a. With neat sketch, explain the minimum turning radius. (06 Marks)  
b. 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. (06 Marks)  
c. Explain briefly the factors to be considered while selecting a suitable site for an airport. (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.

- 6 a. Write short notes on airport classification. (06 Marks)  
b. Explain the factors which affect the location of exit taxiway. (06 Marks)  
c. The length of runway under standard conditions is 1620m. The airport site has an elevation of 270m. Its reference temperature is 32.94°C. If runway is to be constructed with an effective gradient of 0.20%, determine the corrected runway length. (08 Marks)
- 7 a. What is tunnel? Mention its advantages. (04 Marks)  
b. Explain with sketch the needle beam method of tunneling. (06 Marks)  
c. Explain a method of transfer of centre line into the tunnel and providing grade. (10 Marks)
- 8 a. Explain with suitable sketch, the working of a dry dock. (08 Marks)  
b. Brief the functions of:  
i) Quays    ii) Jettics    iii) Harbour    iv) Tetrapods (12 Marks)

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