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P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Sixth Semester, B.E. - Civil Engineering
Semester End Examination; May/June - 2019
Transportation Engineering

Time: 3 hrs   Max. Marks: 100

*Note: Answer **FIVE** full questions, selecting **ONE** full question from each unit.*

UNIT - I

1 a.	Discuss the importance of railway in transportation.	8
b.	Explain the different gauges in railway tracks and factors on the choice of it.	4
c.	Draw a typical cross section of railway track and explain the functions of its various components.	8
2 a.	Compute the steepest gradient that a train of 20 wagans and a locomotive can negotiate given the following data; weight of each wagon = 20 t, weight of locomotive = 150 t, tractive effort of locomotive = 15 t, rolling resistance of wagon = 2.5 kg/t, speed of the train = 60 kmph.	8
b.	What do you meant by coning of wheel?	4
c.	Explain different resistance to traction.	8

UNIT - II

3 a.	Explain the functions and types of rails section.	10
b.	Explain causes and effect of creep in rails.	10
4 a.	Examine different types of sleepers.	10
b.	Explain the different types and sizes of ballast.	5
c.	Appraise the functions and requirements of good ballast.	5

UNIT - III

5 a.	Investigate the necessity of geometric design of railway track.	6
b.	Explain the different types of gradient used in railways.	6
c.	A 5° curve diverges from 3° main curve in reverse direction in the layout of a B.G yard. If the speed on the branch line is restricted to 35 kmph, determine the restricted speed on the main line.	8
6 a.	Compare points and crossing.	5
b.	Draw a neat sketch of left hand turnout with proper labelling.	8
c.	What is super elevation? List the objectives of providing super elevation.	7

UNIT - IV

7 a.	Draw a typical layout of an airport passing its basic components. Mention function of each component.	10
b.	Find out the actual length of the runway required for landing and takeoff under standard atmospheric level at sea level are 2000 m and 1700 m, respectively. The elevation of airport site is 200 m above sea level and the airport reference temperature is 22°C. Effective runway gradient may be taken as 0.5%.	10

8 a. Examine why wind rose diagram is prepared for orientation of runway? Draw a typical sketch of wind rose diagram. 10

b. What is a taxiway? What are the main difference between runway and taxiway? 10

UNIT - V

9 a. Explain different methods of tunnelling with advantages and disadvantages. 10

b. Write short notes on :

i) Tunnel lining 10

ii) Tunnel drainage

10. Write short notes on :

i) Break water

ii) Wharfs and Quays 20

iii) Jasties and Piers

iv) Dry and Wet dock

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