

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Seventh semester B.Tech examinations (S), September 2020

**Course Code: CE407****Course Name: TRANSPORTATION ENGINEERING - II**

Max. Marks: 100

Duration: 3 Hours

PART A*Answer any two full questions, each carries 15 marks.*

Marks

- 1 a) Enumerate the role of Indian Railways in National development. (5)
- b) A 6^0 curve diverges from a 4^0 main curve in reverse direction in the layout of a B.G. track. Speed on branch line is restricted to 35 kmph. Determine the restricted speed on main line. (10)
- 2 a) If the ruling gradient is 1 in 150 on a particular section of Broad Gauge track and at the same time a curve of 4 degree is situated on this ruling gradient, what should be the allowable ruling gradient? (5)
- b) List out any four different urban rail-transits in India. What are tube-railways? (5)
- c) Sketch the typical cross-section of a railway track (5)
- 3 a) What is coning of wheels? Why is it necessary? (5)
- b) Discuss wave theory and percussion theory with respect to creep of rails. (5)
- c) Discuss any five factors affecting the selection of a good alignment of a railway track. (5)

PART B*Answer any two full questions, each carries 15 marks.*

- 4 a) Explain about any four advanced technical remedial aids or measures for prevention of railway accidents. (8)
- b) On a straight B.G. track, a turnout takes off at an angle of $6^0 42' 35''$. Design the turnout if angle of switch is equal to $1^0 8' 00''$, length of switch rails is 4.73 m, heel divergence is equal to 11.43 cm and straight arm is equal to 0.85 m. (7)
- 5 a) Discuss about the maintenance and renewal of rails, sleepers and track fittings. (8)
- b) List out the different types of functional signals. Discuss in detail the working of any one signal with neat sketch. (7)

- 6 a) What is the purpose of providing marshalling yards? What are the main siding features of marshalling yards? Support your answers with appropriate figures. (8)
- b) What is packing? Explain the three different types of packing (7)

PART C

Answer any two full questions, each carries 20 marks.

- 7 a) Explain the three systems of mechanical ventilation of a tunnel with neat sketch. (10)
- b) How do you classify harbours? Explain in detail (10)
- 8 a) List out different methods of tunnelling in hard rocks. Explain any one of the method. (10)
- b) Discuss the three methods of mound construction. (10)
- 9 a) Draw neat sketch and explain the forces created due to wave action against a marine structure. What are the phenomena occurring due to these forces? (10)
- b) Explain the four different stages in setting out the centre line of tunnel. (10)
