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Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Sixth Semester B.Tech Degree Regular and Supplementary Examination July 2021



Course Code: CE308

Course Name: TRANSPORTATION ENGINEERING - I

Max. Marks: 100

Duration: 3 Hours

**PART A**

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

Marks

- 1 a) Discuss the effects of shape of camber and the effects of providing steep cross fall. (5)
- b) Derive an equation for finding super elevation in a highway. (10)
- 2 a) Enumerate various design factors controlling vertical alignment of highways. (5)
- b) Explain overtaking sight distance and factors influencing it. Derive the expression for OSD for a two lane two directional traffic road. Also explain the significance of overtaking zones (10)
- 3 a) Derive an expression for finding stopping sight distance on a level road (4)
- b) Explain "PIEV" theory and its significance in highway geometric design (5)
- c) A vertical summit curve is formed at intersection of two gradients, +2.5 and -4.5 percent. Design the length of summit curve to provide a stopping sight distance for a design speed of 75kmph. Assume other data. (6)

**PART B**

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

- 4 a) Enumerate different methods of carrying out traffic volume studies. (4)
- b) Explain the desirable properties of aggregate to be used in different types of pavement construction. (5)
- c) Discuss about various types of failures in cement concrete pavement and explain their causes. (6)
- 5 a) Explain different types of bituminous materials used in road construction under various circumstances. (4)
- b) Discuss how the problem of road construction in a water logged area in Kerala may be solved. (5)

- c) Discuss the importance of gross wheel load and contact pressure in stress distribution pattern in pavement design. (6)
- 6 a) Explain origin and destination study. (4)
- b) Explain the cross section of flexible pavement with a neat sketch. Enumerate functions and importance of each component of pavement. (5)
- c) Enumerate various methods in the construction of bituminous pavement. (6)

**PART C**

*Answer any two full questions, each carries 20 marks.*

- 7 a) Explain various types of traffic signals and their function. How are the signal timings decided by Webster method? (8)
- b) Explain the different aircraft characteristics that affect the planning and design of airports. (6)
- c) What is an exit taxiway? Explain the design procedure of an exit taxiway. (6)
- 8 a) Define basic runway length. Explain how various corrections are applied to obtain actual runway length. (8)
- b) What are the factors to be considered in geometric design of a runway? (6)
- c) Enumerate various types of grade separated intersections. (6)
- 9 a) Explain different aircraft parking system with neat sketches. Also mention the merits and demerits of each system. (8)
- b) What are various types of traffic markings commonly used? (6)
- c) Sketch and explain various runway markings. (6)

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