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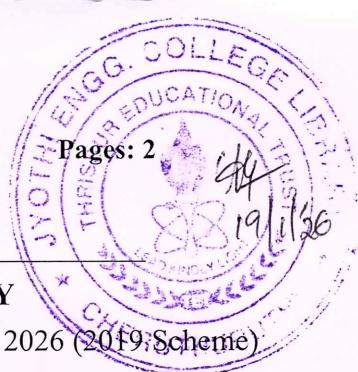
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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
B.Tech Degree S4 (S,FE) (FT/WP) (S2 PT) Examination December 2025/January 2026 (2019 Scheme)

Course Code: CET206
Course Name: TRANSPORTATION ENGINEERING

Max. Marks: 100   Duration: 3 Hours

PART A
(Answer all questions; each question carries 3 marks)   Marks

1	Explain the significance of obligatory points in highway alignment.	3
2	What are kerbs? Describe the different types of kerbs.	3
3	Differentiate between flexible and rigid pavements.	3
4	Discuss angularity number of aggregates.	3
5	Define basic, possible and practical traffic capacity.	3
6	Explain various traffic control devices.	3
7	Explain coning of wheels.	3
8	Differentiate between dry docks and wet docks.	3
9	List out the components of an airport	3
10	Describe the functions of taxiways in an airport.	3

PART B
(Answer one full question from each module, each question carries 14 marks)

Module -1

11 a) Explain the necessity of providing extra-widening on horizontal curves   4

b) The speeds of overtaking and overtaken vehicles is 80 kmph and 60 kmph   10
respectively on a two-way traffic road. If the acceleration of the overtaking
vehicle is 0.9 m/sec2, calculate the safe overtaking sight distance.

12 a) Describe the factors affecting geometric design of highways.   8

b) The radius of horizontal curve is 100 m. The design speed is 50 kmph. The   6
design coefficient of lateral friction is 0.15.
  (i) Calculate the superelevation required, if full lateral friction is assumed to
      develop.
  (ii) Calculate coefficient of friction needed, if no superelevation is provided.
  (iii)Calculate equilibrium superelevation if the pressure on inner and outer
      wheels should be equal

Module -2

13 a) Explain the desirable properties of road aggregates in pavement construction.   4

    b) Describe any 4 tests conducted on road aggregates to assess its suitability in   10
        pavement construction.

14 a) Describe in detail softening point test and ductility test conducted on bitumen.   8

    b) Explain the construction procedure of bituminous concrete surface layer.   6

Module -3

15 a) Normal flow of a traffic cross road A and B are 400 and 250 pcu/hr. The   10
        saturated flow of the above two roads are 1250 and 1000 pcu/hr respectively. The
        all-red time is 12 seconds. Design a two-phase traffic signal. Draw the timing
        diagram also.

    b) Explain traffic islands. Discuss the different types of traffic islands.   4

16 a) Explain the different methods of O-D studies. Describe the significance of desire   10
        line charts in O-D studies

    b) Discuss PCU and PCU equivalency factors for different vehicle classes in the   4
        context of traffic volume studies.

Module -4

17 a) Explain the functions and requirements of various component parts of a railway   10
        track.

    b) Describe the different types of gauges in railway track.   4

18 a) With the help of neat sketches, explain the procedure for transferring the centre   10
        line and grade of a proposed tunnel from a ground surface to tunnel interior.

    b) List out and briefly explain the classification of harbours based on utility.   4

Module -5

19 a) The length of runway under standard conditions is 1620 m. The airport site has   10
        an elevation of 270 m. Its reference temperature is 32.9°C. If the runway is to be
        constructed with an effective gradient of 0.2 percent, determine the corrected
        runway length.

    b) With the help of neat sketches illustrate the various systems of aircraft parking.   4

20 a) What is a wind rose diagram? Explain how Type 1 and Type 2 Windrose   10
        diagrams help in fixing the best orientation of a runway

    b) Describe the significance of head wind during the take-off and landing.   4

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