Roll No: | | | | | | | | | | | |

GAIN MORE KNOWLEDGE
REACH GREATER HEIGHTS

PRESIDENCY UNIVERSITY

Presidency University Act, 2013 of the Karnataka Act No. 41 of 2013 | Established under Section 2(f) of UGC Act, 1956
Approved by AICTE, New Delhi | Approved By BCI
Bengaluru

Mid Term Examinations - October 2026

Date: 08/10/2026 **Time:** 11:45 AM - 01:15 PM

Course Code: CIV2501 **Course Name:** Transportation Engineering

Semester: Third Semester **Max. Marks:** 50 **Weightage:** 50%

CO - Levels	CO1	CO2
Marks	24	66

PART A: Answer Following Questions. 10 M

Q.N.	Questions	M	CO	BT
1	Define highway alignment. Name its two types.	2	CO1	BT1
2	Name the equipment used for estimating a) Flash and fire point of bitumen b) Hardness of aggregates	2	CO1	BT1
3	State two factors affecting highway geometric design.	2	CO2	BT1
4	Define superelevation in a highway.	2	CO2	BT1
5	Define overtaking zones and their desirable length.	2	CO2	BT1

PART B : Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
6	Using the Maximum Utility Concept, state the sequence of construction of the following highway projects.	10	CO1	BT2
7	Discuss the various surveys conducted before finalizing the alignment of a highway.	10	CO1	BT2

Projects	Population >1 lac	Population 30k-40k	Population <30k	Industrial Production (tons)	Road length(km)
NH 45	12	30	52	80	40
NH 27	20	52	85	70	30
NH 28	5	15	100	105	70

PART C: Answer Any 1 Following Questions. 15 M

Q.N.	Questions	M	CO	BT
8	Calculate the safe overtaking sight distance for a Mahindra XUV vehicle travelling at 75 kmph on National Highway (NH) 44. Assume its acceleration as 1.01 m/sec^2 and all other data as per IRC. Also estimate minimum and desirable values of overtaking zones with a neat sketch.	15	CO2	BT3
9	While driving your personal Hyundai i20 car at 65 kmph on a two-lane, two-way road, you decide to overtake a tractor moving at 35 kmph. Calculate the safe overtaking sight distance you need if you accelerate at 0.99 m/sec^2 . Also state the minimum and desirable length of overtaking zones with a neat sketch.	15	CO2	BT3

PARTD: Answer Any 1 Following Questions. 15 M

PTO (Please Turn Over)

Q.N.	Questions	M	CO	BT
10	a. Design the superelevation for a horizontal highway curve on NH 48 from Bangalore to Chennai, with a radius of 525 m and a speed of 100 kmph. b. Calculate the safe stopping sight distance for a vehicle at 75 kmph on NH 48 when moving on a descending gradient of 1.1%. Assume all other data as per IRC.	15	CO2	BT3
11	The design speed of NH 75 from Bangalore to Mangalore is 80 kmph. There is a horizontal curve of radius 220 m near the Ghati section, approaching Mangalore. For the above conditions, i) Calculate the super elevation required to maintain this speed and allow safe movement of vehicles. ii) If the maximum superelevation of 7% is not to be exceeded, calculate the maximum allowable speed on this horizontal curve, as it is not possible to increase the radius due to the hilly terrain of the Ghati section. iii) Calculate the stopping sight distance for a vehicle moving at the above allowable speed on this NH. Assume all other data as per IRC.	15	CO2	BT3