

Birla Institute of Technology & Science, Pilani- Pilani Campus

First Semester 2023-2024

Mid Semester Exam

Course No: CE G567

Nature of Exam: Closed Book

Duration: 90 Min

Course Title: Highway Design

Max. Marks: 50 (Weightage: 30%)

Date of Exam: 09/10/2023

Note:

1. All questions are compulsory.
 2. Figures to the right indicate full marks
 3. Assume suitable data if necessary
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Q 1	Among the VG30 and VG40, which type of bitumen will provide the more skid resistance? Explain the reason for higher skid resistance. [4]
Q 2	Explain the different types of transverse markings. [8]
Q 3	On a stop controlled intersection, the vehicle approaching from a minor road going to take a right turn. Calculate the intersection sight distance of a single-unit truck travelling along the major road of intersection at a speed of 50 km/h for (a) Two lane road with upgrade less than 3% (b) Four lane road with upgrade less than 3% (c) Four lane road with upgrade +5% [12]
Q 4	Explain the countermeasures to improve the intersection sight distance. [8]
Q 5	Write the procedure for measurement of sight distance at stop controlled intersection. [4]
Q 6	The speed of overtaking vehicle is 80 kmph. If the acceleration of the overtaking vehicles is 0.72 m/sec^2 (a) Calculate safe overtaking sight distance for one-way and two-way traffic road (b) Estimate the minimum and desirable length of overtaking zone for one-way and two-way traffic road. Use IRC approach. Take $t = 2 \text{ sec}$ [14]

Design Vehicle	Time Gap (s) at Design Speed of major road (t_g)
Passenger car	6.5
Single-unit truck	8.5
Combination truck	10.5