BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION SP2023)

CLASS: BTECH   SEMESTER : VI
BRANCH: CIVIL   SESSION : SP2023

SUBJECT: CE305 TRANSPORTATION ENGINEERING

TIME: 02 Hours   FULL MARKS: 25

INSTRUCTIONS:
1. The question paper contains 5 questions each of 5 marks and total 25 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
4. **Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates**

			CO	BL
Q.1(a)	Explain about camber. Discuss the factors on which the amount of camber to be provided depends.	[2]	1	2
Q.1(b)	Calculate the minimum sight distance required to avoid a head on collision of two cars approaching from the opposite directions at 90 and 60 km/h. Assume a rection time of 2.5 seconds, co-efficient of friction of 0.7 and a brake efficiency of 50%, in either case.	[3]	1	3
Q.2(a)	Discuss about the factors on which the overtaking sight distance depends.	[2]	1	2
Q.2(b)	On a two way traffic road, speed of overtaking and overtaken vehicles are 65 and 40 km/h. If the acceleration of overtaking vehicle is 0.92 m/sec^2, Draw the overtaking zone.	[3]	1	4
Q.3(a)	Indicate how the traffic volume data are presented and the results used in traffic engineering.	[2]	2	2
Q.3(b)	Spot speed studies were carried out at a certain stretch of a highway and the consolidated data collected are given below.	[3]	2	4

Speed range, (Km/h)	No. of vehicles observed	Speed range, (Km/h)	No. of vehicles observed
0 to 10	12	50 to 60	255
10 to 20	18	60 to 70	119
20 to 30	68	70 to 80	43
30 to 40	89	80 to 90	33
40 to 50	204	90 to 100	9

Determine (i) the upper and lower values or speed limits for regulation of mixed traffic flow.

(ii) the design speed for checking the geometric design elements of the highway.

			CO	BL
Q.4(a)	Explain origin and destination study and also discuss about the uses of O and D studies.	[2]	2	2
Q.4(b)	Describe about PCU and mention the factors on which PCU values depend.	[3]	2	3
Q.5(a)	Explain the difference between Flexible and Rigid pavements.	[2]	3	3
Q.5(b)	Draw a sketch of flexible pavement. Enumerate the functions and importance of each component of the pavement.	[3]	3	4

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