JAIPUR ENGINEERING COLLEGE & RESEARCH CENTRE
DEPARTMENT OF CIVIL ENGINEERING
Academic Session 2020-21
Assignment-I for Slow Learners

SUBJECT: Transportation Engineering (7CE4-01) **SEMESTER -VII**

Q.1What are the different modes of transportation.

Q.2 Explain the necessity and objects of highway planning.

Q.3 Write short notes on Master Plan & fact finding Surveys.

Q.4 Explain briefly the various stages of work in a new Highway Project.

Q.5 Explain obligatory points with sketches.

Q.6 Explain camber & objects of camber.

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Assignment-II for Slow Learners

SUBJECT: Transportation Engineering (7CE4-01) **SEMESTER -VII**

Q.1Explain PIEV theory with total reaction time of driver & factors on which it depends.

Q.2 Discuss the requirement of summit curves and its shape.

Q.3 Explain the various design factors controlling the vertical alignment of highways.

Q.4 What are the applications and limitations of shear, bearing and penetration tests.

Q.5 What are the desirable properties of bituminous mixes.

Q.6 Explain “flexible and Rigid “pavements and write down the difference.

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Assignment-I for Fast Learners

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1. Consider the following data: Design speed = 96 kmph Speed of overtaken vehicle = 80 kmph Reaction time for overtaking = 2 sec Acceleration = 2.5 kmph/sec. What will be the safe overtaking sight distance on a two way traffic road?
2. Calculate the total length of a valley formed by two gradients - 3% and + 2% curve between the two tangent points to provide a rate of change of centrifugal acceleration 0.6 m/sec^2, for a design speed 100 kmph.
3. If the ruling gradient on any highway is 3%, then calculate the gradient provided on the curve of 300 metre radius.
4. In a braking test, a vehicle was moving with a speed of 45 kmph and was stopped by applying brakes, the skid marks were 10.0 m in length. Determine the skid resistance.
5. If the acceleration of the vehicle is 6.17m/sec^2 then calculate the average skid resistance?
6. Calculate equilibrium cant on MG curve of 6 degree for an average speed of 50 km/ hr. Also find out the maximum permissible speed after allowing maximum cant deficiency.
7. A railway curve of 1350 m radius is to be set out to connect two tangents. If the design speed is 110 kmph and the rate of change of acceleration is 0.3 m/s^3 , the shift of the circular curve will be nearly.
8. A priority intersection has a single-lane one-way traffic road crossing an undivided twolane two-way traffic road. The traffic stream speed on the single-lane road is 20 kmph and the speed on the two-lane road is 50 kmph. The perception-reaction time is 2.5 s, coefficient of longitudinal friction is 0.38 and acceleration due to gravity is 9.81 m/s^2. A clear sight triangle has to be ensured at this intersection. The minimum lengths of the sides of the sight triangle along the two-lane road and the single-lane road, respectively will be.

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Assignment-II for Fast Learners

SUBJECT: Transportation Engineering (7CE4-01) **SEMESTER -VII**

1. Given the following data: design life n = 15 years, lane distribution factor D = 0.75, annual rate of growth of commercial vehicles r = 6%, vehicle damage factor F = 4 and initial traffic in the year of completion of construction = 3000 Commercial Vehicles Per Day (CVPD). As per IRC:37-2012, then find design traffic in terms of cumulative number of standard axles (in million standard axles, up to two decimal places).
2. Peak Hour Factor (PHF) is used to represent the proportion of peak sub-hourly traffic flow within the peak hour. If 15-minute sub-hours are considered, then calculate theoretically possible range of PHF.
3. Vehicles arriving at an intersection from one of the approach roads follow the poisson distribution. The mean rate of arrival is 900 vehicles per hour. If a gap is defined as the time difference between two successive vehicle arrivals (with vehicles assumed to be points), then calculate probability (up to four decimal places) that the gap is greater than 8 seconds.
4. Two cars PP and QQ are moving in a racing track continuously for two hours. Assume that no other vehicles are using the track during this time. The expressions relating the distance travelled d (in km) and time t (in hour) for both the vehicles are given as
   P:$d=60\ t$
   Q:$d=60\ t^2$
   Then what would be within the first one hour, the maximum space headway.
5. While traveling along and against the traffic stream, a moving observer measured the relative flows as 50 vehicles/hr and 200 vehicles/hr, respectively. The average speeds of the moving observer while traveling along and against the stream are 20 km/hr and 30 km/hr, respectively. Then find the density of the traffic stream (expressed in vehicles/km).
6. The critical flow ratios for a three-phase signal are found to be 0.30, 0.25, and 0.25. The total time lost in the cycle is 10 s. Pedestrian crossings at this junction are not significant. Then find the respective Green times (expressed in seconds and rounded off to the nearest integer) for the three phases.
7. An isolated three-phase traffic signal is designed by Webster's method. The critical flow ratios for three phases are 0.20, 0.30, and 0.25 respectively, and lost time per phase is 4 seconds. Calculate the optimum cycle length (in seconds).