B. E. CIVIL ENGINEERING FOURTH YEAR FIRST SEMESTER EXAMINATION 2019 (OLD)
TRANSPORTATION ENGINEERING-II

Time:3 Hours

Full Marks: 100

(50 marks for each part)

Answer ALL Questions

1. Write short notes on the following –   6×5=30
   a. External Cordon Line
   b. Off-street parking
   c. Presentation of Accident Data
   d. Traffic volume growth factors
   e. Dowel Bar
   f. Longitudinal Joints in Rigid Pavement

2. Determine the Time mean speed, Space mean speed, Design Speed, Maximum allowable speed, Minimum allowable speed and Characteristics speed for accident study for the following observations of a state highway.   15

Speed Range	20 – 30	30 – 40	40 – 50	50 – 60	60 – 70	70 – 80
Frequency	20	75	143	139	94	29

3. The parking survey data collected from a 10-bay parking lot by license plate method is as shown below. Determine Overall Parking Load, Average Parking Index, Parking Volume, Average Turnover, and Average Duration of the parking lot.   15

Time	Bays									
	1	2	3	4	5	6	7	8	9	10
0-15	1945	3473	3741	1884	-	-	8932	7653	7321	1213
15-30	1945	5463	3741	1884	7357	4895	8932	7653	-	1213
30-45	1945	5463	9758	-	-	4895	8932	8998	2789	3212
45-60	1945	5463	4825	7594	7893	4895	-	4821	2789	4778

4. Design a suitable 5–phase (including one pedestrian phase) traffic signal for a "good quality" perpendicular intersection of two 6-lane dual carriageway roads AB and CD both having 2m wide refuge islands on them. Assume pedestrian green time of 8secs and pedestrian speed as 1.5 m/s. Starting delay of 3 secs, and Amber period of 4secs are applicable in vehicular phases only. Use the following traffic data expressed in pcu/hr and consider the movement from A to C as left turn and right turning radius, if required, as 30m.   20

From	A			B			C			D		
To	C	B	D	D	A	C	B	D	A	A	C	B
flow	38	785	169	91	611	162	37	630	159	57	832	153

5. Determine the CBR value of subgrade soil from the following standard test results   10

   Penetration (mm) 0.0   0.5   1.0   1.5   2.0   2.5   3.0   4.0   5.0   7.5   10.0 12.5

   Load (kg)   0   5   17   29   42   50   58   70   78   92   102   108

6. Determine the design traffic for a 6-lane dual carriageway 2-way street AB following the IRC:37-2001 guideline considering annual growth rate of 7.5% and design life of 15 years from present day and Lane Distribution Factor as 60% using the results of traffic survey as follows – 10

Single Axle Load	8.0t	6.0t	5.0t	3.0t
Traffic Volume in veh/day (A to B)	1000	9250	9400	1850
Traffic Volume in veh/day (B to A)	1250	9150	10600	1800