University of Mumbai
Examination 2020

Program: **T.E. (Civil) (REV. -2016) (Choice Based)** Engineering
Curriculum Scheme: Rev2016
Examination: Third Year Semester VI
Course Code: **CE-DLO6062** and Course Name: **Traffic Engineering and Management**

Time: 1 hour Max. Marks: 50

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For the students:- All the Questions are compulsory and carry equal marks .

Q1.	To reduce the conflict points which method is preferable?
Option A:	Restricting the entry in one side
Option B:	Widening of the roads
Option C:	**Use of traffic signals**
Option D:	Diverting the traffic
Q2.	What is the main cause of accidents in urban areas?
Option A:	**Improper planning**
Option B:	Extra wide roads
Option C:	Additional thickness of the pavement
Option D:	Traffic congestion
Q3.	If the running time at 3 km stretch is 200 sec. delay is of 40 sec, journey speed will be
Option A:	**45 kmph**
Option B:	67.5 kmph
Option C:	82.25 kmph
Option D:	22.5 kmph
Q4.	An intelligent driver who consumed alcohol will have a chance of _____
Option A:	Increased alertness
Option B:	Increase in reaction time
Option C:	Increase in speed
Option D:	Increase in judgment
Q5.	The speed at any instant of time is called
Option A:	Running speed
Option B:	Travel speed
Option C:	Spot speed
Option D:	Space speed
Q6.	Which movement is useful for planning a bye pass
Option A:	Internal to Internal
Option B:	Internal to External
Option C:	External to Internal
Option D:	**External to External**
Q7.	Which one of the following is a feature of an urban area?
Option A:	A minimum population of 500

Option B:	At least 75% of the male main working population engaged in agricultural pursuits
Option C:	A population density of at least 400 persons per sq. km.
Option D:	A minimum population of 100
Q8.	Metropolitan Area has population of or more.
Option A:	15 Lakhs
Option B:	20 Lakhs
Option C:	10 Lakhs
Option D:	30 Lakhs
Q9.	In Lowry's Land-use-Transport model _____ is considered as endogenous element.
Option A:	Retail sector
Option B:	Residential sector
Option C:	Basic sector
Option D:	Employment
Q10.	Which of the following is not the factor affecting trip generation?
Option A:	Income
Option B:	Car ownership
Option C:	Family size
Option D:	Built-up area of house
Q11.	_____ is the dependent variable in regression analysis for Trip Generation.
Option A:	Households
Option B:	Car ownership
Option C:	Income
Option D:	Number of trips
Q12.	The category analysis for trip generation considers _____ as the fundamental analysis unit.
Option A:	Land-use
Option B:	Household
Option C:	Accessibility
Option D:	Vehicle ownership
Q13.	Person trips per day by car is 1008 and the average car occupancy is 2.8. Determine the number of cars.
Option A:	63
Option B:	36
Option C:	360
Option D:	630
Q14.	_____ is the simplest method for route assignment analysis.
Option A:	Diversion curve method

Option B:	All or nothing assignment
Option C:	Capacity restraint assignment technique
Option D:	Multiple route assignment algorithms
Q15.	Gravity model for trip distribution is based on
Option A:	Einstein's theory of general relativity
Option B:	Newton's law of universal gravitation
Option C:	Coulomb's law of inverse square
Option D:	Definition of gravity
Q16.	_____ is the present value of a future payment or a series of future payments at the given rate of interest.
Option A:	Interest rate
Option B:	Present Worth
Option C:	Rate of Return
Option D:	Discounting
Q17.	The future worth of Rs 1,00,000 at the end of 20 years invested at a compound rate of interest of 12 % per annum is Rs.
Option A:	9,646.30
Option B:	96,463
Option C:	9,64,630
Option D:	96,46,300
Q18.	The present worth of a sum of Rs 75,000 at the end of 10 years when the discount rate is 10 % per annum is Rs. _____
Option A:	2,891.25
Option B:	28,91,250.00
Option C:	2,891,25.00
Option D:	28,912.50
Q19.	The annual cost of maintenance of a new road thrown open to traffic is Rs 1500000. The future worth of this expenditure at the end of 10 years when the rate of interest is 15 % per annum is Rs.
Option A:	304555.5
Option B:	3045555
Option C:	30455550
Option D:	304555500
Q20.	A major rehabilitation of a pavement will be done 10 years from hence at a cost of Rs100 lakh. The series of uniform annual payments that must be set apart to accumulate this amount, if the interest rate is 9% per annum is Rs lakh
Option A:	0.658
Option B:	6.58
Option C:	65.8
Option D:	658

<table>
<tr><th>Q2</th><th>Solve any Four out of Six 5 marks each</th></tr>
<tr><td>A</td><td>Discuss on various factors affecting PCU values.</td></tr>
<tr><td>B</td><td>A 2-lane traffic system for 2000 veh/hr capacity is taken up for repair. If traffic flow is 1500 veh/hr on free section, find mean speed at the bottleneck. Assume headway of 8m at jam condition. The maximum capacity at bottleneck is 1100 veh/hr. Also find the length of queue formed in 15 minutes.</td></tr>
<tr><td>C</td><td>Estimate future year trip interchange between three zones from the given data. Take n=2 & kij= 1.2
<table>
<tr><th>Zone</th><th>Production</th><th>Attraction</th></tr>
<tr><td>1</td><td>500</td><td>2</td></tr>
<tr><td>2</td><td>600</td><td>4</td></tr>
<tr><td>3</td><td>200</td><td>8</td></tr>
</table>
<table>
<tr><th>O-D</th><th>Travel Time</th></tr>
<tr><td>1-1</td><td>5</td></tr>
<tr><td>2-2</td><td>3</td></tr>
<tr><td>3-3</td><td>4</td></tr>
<tr><td>1-2</td><td>10</td></tr>
<tr><td>1-3</td><td>8</td></tr>
<tr><td>2-3</td><td>15</td></tr>
</table></td></tr>
<tr><td>D</td><td>Discuss in detail on BENEFITS OF TRANSPORT PROJECTS.</td></tr>
<tr><td>E</td><td>Find IRR for a project having investment 1 lakh and cash inflow 30,000 rs. per year for 4 years.</td></tr>
<tr><td>F</td><td>Explain methods for TSM</td></tr>
</table>

<table>
<tr><th>Q3</th><th>Solve any Four out of Six 5 marks each</th></tr>
<tr><td>A</td><td>Explain and derive QKV curve and equation</td></tr>
<tr><td>B</td><td>Solve the following matrix for the future trip distribution using Uniform growth factor method for constant 1.3
<table>
<tr><th>O/D</th><th>1</th><th>2</th><th>3</th><th>Pj</th></tr>
<tr><td>1</td><td>120</td><td>60</td><td>90</td><td>300</td></tr>
<tr><td>2</td><td>75</td><td>90</td><td>70</td><td>400</td></tr>
<tr><td>3</td><td>45</td><td>120</td><td>75</td><td>320</td></tr>
<tr><td>Aj</td><td>360</td><td>300</td><td>360</td><td></td></tr>
</table></td></tr>
<tr><td>C</td><td>Write a detail note on road signs.</td></tr>
<tr><td>D</td><td>Design a signal using fixed time method for a right angle intersection including pedestrian signal. Phase diagram is not needed.
<table>
<tr><th></th><th>PCU/hr</th><th>Width of road in meter</th></tr>
<tr><td>N</td><td>275</td><td>18</td></tr>
<tr><td>S</td><td>280</td><td>18</td></tr>
<tr><td>E</td><td>225</td><td>12</td></tr>
<tr><td>W</td><td>200</td><td>12</td></tr>
</table></td></tr>
</table>

<table>
<tr><td></td><td></td></tr>
<tr><td>E</td><td>Write note on ATC</td></tr>
<tr><td>F</td><td>A business man has two options to invest. Suggest on basis of NPV which project is better.
<table>
<tr><td>Project</td><td>A</td><td>B</td><td>remark</td></tr>
<tr><td>Investment</td><td>1,50,000/-</td><td>2,10,000/-</td><td>i= 6%</td></tr>
<tr><td>Annual returns</td><td>45,570</td><td>58,260</td><td>Project life 5 years</td></tr>
</table></td></tr>
</table>