SRM VALLIAMMAI ENGINEERING COLLEGE

(An Autonomous Institution)

SRM Nagar, Kattankulathur – 603 203

DEPARTMENT OF CIVIL ENGINEERING

QUESTION BANK

VI SEMESTER

1903606 - TRAFFIC ENGINEERING AND MANAGEMENT

Regulation – 2019

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Prepared by

Mr. N.ARUNPRAKASH, Assistant Professor/ CIVIL

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DEPARTMENT OFCIVIL ENGINEERING

QUESTION BANK

SUBJECT : TRAFFIC ENGINEERING AND MANAGEMENT

SEM / YEAR: VI/ III

UNIT I - TRAFFIC PLANNING AND CHARACTERISTICS

Road Characteristics – Road user characteristics – PIEV theory – Vehicle – Performance characteristics – Fundamentals of Traffic Flow – Urban Traffic problems in India – Integrated planning of town, country, regional and all urban infrastructure – Towards Sustainable approach. – Land use & transport and modal integration.

PART - A

Q.No	Questions	BT Level	Competence
1.	Define Traffic Engineering	BT 1	Remembering
2.	List the basic components or division in Traffic engineering.	BT 1	Remembering
3.	In a braking test, vehicle travelling at the speed of 80 kmph was stopped by applying brake fully and the skid marks were 7.8 m. Find the average skid resistance of the pavement surface.	BT 1	Remembering
4.	Show the static and dynamic characteristics of vehicle.	BT 1	Remembering
5.	How does age of the driver influence driving behavior?	BT 1	Remembering
6.	What is the significance of braking test?	BT 1	Remembering
7.	What is meant by PCU? How its values are fixed?	BT 1	Remembering
8.	Summarize the interactions between land use and traffic characteristics?	BT 2	Understanding
9.	Explain PIEV theory. Write its significance on road	BT 2	Understanding
10.	Explain the role of 'Vision' as the road user characteristics in traffic studies?	BT 2	Understanding
11.	Summarize the transmission losses in power performance of vehicle?	BT 2	Understanding
12.	Explain any one road user characteristic with Indian Road Congress standards.	BT 2	Understanding
13.	Write about any eight major traffic problems of roads traffic characteristics?	BT 3	Applying
14.	Write about 'Roughness Index' and 'Skid resistance'	BT 3	Applying
15.	Write down the factors governing the skid resistance of a vehicle?	BT 3	Applying
16.	Compare 'Time Mean Speed' and 'Space Mean Speed'	BT 4	Analyzing
17.	Compare 'Time Headway' and 'Space Headway'	BT 4	Analyzing
18.	Write about a design vehicle? Classify the various effects of power of vehicle in the road?	BT 4	Analyzing
19.	List out any eight major traffic problems of road traffic.	BT 4	Analyzing
20.	What are the importance of land use transport interaction	BT 5	Evaluating
21.	Explain the importance of traffic engineering in Indian context?	BT 5	Evaluating
22.	Compare 'Slip' and 'Skid'	BT 5	Evaluating

23.	Discuss the objectives of traffic engineering	BT 6	Creating
24.	Discuss about the various methods used to measure the skid resistance.	BT 6	Creating
25.	Discuss about modal integration?	BT 6	Creating

PART – B

1.	What are the various vehicle characteristics which affect the road design and traffic performance?	BT 1	Remembering
2.	List out the factors influencing the skidding resistance of road surface.	BT 1	Remembering
3.	What are the different types of resistance that is offered by the vehicle when it is in motion? Explain.	BT 1	Remembering
4.	Define rolling and air resistance. Explain it briefly.	BT 1	Remembering
5.	Summarize about the fundamentals of Traffic flow. With neat sketches explain the fundamentals diagrams of traffic flow.	BT 2	Understanding
6.	Summarize about the power performance of vehicles.	BT 2	Understanding
7.	Classify the various methods used to measure the skid resistance? Explain it briefly.	BT 2	Understanding
8.	Calculate the braking efficiency of the vehicle moving at 60 km/h was stopped by applying the brake and the length of the skid mark was10 m. Take the average skid resistance of the surface of the pavement is 0.68.	BT 3	Applying
9.	A vehicle has been stopped in 2 secs by the complete application of brakes and the marks were measured as 6 m. Determine the average skid resistance.	BT 3	Applying
10.	A passenger car weighing 2 tonnes is required to accelerate at a rate of 3 m/sec^2 in the first year from a speed of 11 K.P.H. the Gradient is +1 percent and the road have a black topped surface. The frontal projection area of the car is 2.0m^2. The car tyres have radius of 0.33 m. The rear axle gear ratio is 3.82 : 1 and the first gear ratio is 2.78 : 1. Calculate the engine horsepower needed and the speed of the engine. Make suitable assumptions.	BT 3	Applying
11.	List out the construction and maintenance of skid resistance surfaces?	BT 4	Analyzing
12.	List out the various road user characteristics with Indian Road Congress	BT 4	Analyzing
13.	i) Evaluate the average skid resistance for a vehicle travelling at the speed of 12m/sec and stopped within 2 secs, after the application of brakes. (7) ii) In a braking test, a vehicle of speed 10 m/sec was stopped by the full application of brakes and the skid marks were 6m in length. Evaluate and design the skid resistance of the pavement surface. (6)	BT 5	Evaluating
14.	What is meant by Integrated Transportation? Discuss the various planning techniques.	BT 6	Creating

PART – C

1.	Write in brief the importance of Land-use and Transport interaction in transportation planning.	BT 1	Remembering
2.	Explain in detail the characteristics of road, traffic and land use.	BT 2	Understanding
3.	Explain in detail the regional and all urban infrastructures towards inclusive sustainable development.	BT 5	Evaluating
4.	Discuss in brief the main urban Traffic Problems with regard to Chennai new city.	BT 6	Creating

UNIT II - TRAFFIC SURVEYS

Traffic Surveys – Speed, journey time and delay surveys – Vehicles Volume Survey including non-motorized transports – Methods and interpretation – Origin Destination Survey – Methods and presentation – Parking analysis – Accident analyses -Methods, interpretation and presentation – Statistical applications in traffic studies and traffic forecasting – Level of service – Concept, applications and significance.

PART - A

Q.No	Questions	BT Level	Competence
1.	Define Spot speed and Spot maps.	BT 1	Remembering
2.	Define "Running Speed and Journey Speed" in traffic speed studies.	BT 1	Remembering
3.	What are the various traffic surveys?	BT 1	Remembering
4.	What is 98^{th} percentile speed? State its significance.	BT 1	Remembering
5.	List out any two uses of origin and destination survey.	BT 1	Remembering
6.	List the various types of volume counts.	BT 1	Remembering
7.	How O &D data are represented?	BT 1	Remembering
8.	Define Spot maps.	BT 1	Remembering
9.	Compare basic and possible highway capacity.	BT 2	Understanding
10.	Show the purpose of collecting the traffic survey data?	BT 2	Understanding
11.	Summarize the objectives of traffic surveys?	BT 2	Understanding
12.	Summarize about 30^{th} Highest Hourly volume	BT 2	Understanding
13.	Outline the factors which affect capacity and level of service.	BT 2	Understanding
14.	Write about the desire line chart?	BT 3	Applying
15.	Write a short note on level of service in traffic analysis?	BT 3	Applying
16.	Write down the characteristics of level of service "C" in traffic flow on the road.	BT 3	Applying
17.	Compare 'Traffic Capacity' and 'Traffic Density'	BT 4	Analyzing
18.	Compare 'Traffic Projection Factor' and 'Current Traffic'.	BT 4	Analyzing
19.	Classify the various types of accident surveys?	BT 4	Analyzing
20.	List the methods of collecting spot speed.	BT 4	Analyzing
21.	Explain parking index.	BT 5	Evaluating
22.	Explain accident rates.	BT 5	Evaluating
23.	What is the importance of Annual average daily traffic (AADT)	BT 5	Evaluating
24.	Discuss about the significance of 'Level of Surface' concept in road service levels?	BT 6	Creating
25.	Design and draw a typical parking inventory diagram with all its vital parts.	BT 6	Creating

PART - B

1.	List out the various methods of carrying out speed and delay study	BT 1	Remembering
2.	List out the various methods of conducting moving observer method of journey speed studies.	BT 1	Remembering
3.	i. Define the term Traffic Volume. (6) ii. What are the objects of carrying out traffic volume studies? (7)	BT 1	Remembering

4.	List out the advantages and disadvantages of manual method of volume count survey.	BT 1	Remembering
5.	Classify the different methods of presenting O&D Data.	BT 2	Understanding
6.	Explain in brief the various levels of service as per Indian Roads congress (IRC) Standards for arterial roads and down town streets.	BT 2	Understanding
7.	Show the details which are to be collected during the parking studies.	BT 2	Understanding
8.	Illustrate the details that have to be collected while conducting parking inventory survey with a neat sketch.	BT 3	Applying
9.	Identify the factors for the design of Off-Street Parking. Explain it briefly.	BT 3	Applying
10.	List out the various factors which affect the capacity and level of service.	BT 4	Analyzing
11.	Classify the various methods of Off-street parking facilities.	BT 4	Analyzing
12.	List out the various factors cause accidents in traffic engineering with ICRC standards.	BT 4	Analyzing
13.	Explain the different statistical applications in traffic studies and forecasting with its significance	BT 5	Evaluating
14.	Discuss about collision and condition diagrams with a neat sketch	BT 6	Creating

PART – C

<table>
<tr><td>1.</td><td>What are the various traffic studies in traffic engineering? Draw its flow chart.</td><td>BT 1</td><td>Remembering</td></tr>
<tr><td>2.</td><td>Summarize the different methods of collecting Origin Destination (OD) studies with its significance.</td><td>BT 4</td><td>Analyzing</td></tr>
<tr><td>3.</td><td>The consolidated data collected from speed and delay studies by floating car method on a stretch of urban road of length 3.5 km, running North – South are given below . Determine the average values of (i) Volume (ii) journey speed and (iii) running speed of traffic stream along each direction.
<table>
<tr><th>Trip No.</th><th>Direction of trip</th><th>Journey time min – sec</th><th>Total stopped delay. Min – sec</th><th>No. of Vehicles Overtaking</th><th>No. of Vehicles Overtaken</th><th>vehicles from opposite direction</th></tr>
<tr><td>1</td><td>N - S</td><td>6 – 32</td><td>1 – 40</td><td>4</td><td>7</td><td>268</td></tr>
<tr><td>2</td><td>S - N</td><td>7 – 14</td><td>1 – 50</td><td>5</td><td>3</td><td>186</td></tr>
<tr><td>3</td><td>N - S</td><td>6 – 50</td><td>1 – 30</td><td>5</td><td>3</td><td>280</td></tr>
<tr><td>4</td><td>S - N</td><td>7 – 40</td><td>2 – 00</td><td>2</td><td>1</td><td>200</td></tr>
<tr><td>5</td><td>N - S</td><td>6 – 10</td><td>1 – 10</td><td>3</td><td>5</td><td>250</td></tr>
<tr><td>6</td><td>S - N</td><td>8 – 00</td><td>2 – 22</td><td>2</td><td>2</td><td>170</td></tr>
<tr><td>7</td><td>N - S</td><td>6 – 28</td><td>1 – 40</td><td>2</td><td>5</td><td>290</td></tr>
<tr><td>8</td><td>S - N</td><td>7 – 30</td><td>1 – 40</td><td>3</td><td>2</td><td>160</td></tr>
</table>
</td><td>BT 5</td><td>Evaluating</td></tr>
<tr><td>4.</td><td>Discuss the various methods of recording accidents. How to prevent the accidents by taking different measures in highway design.</td><td>BT 6</td><td>Creating</td></tr>
</table>

UNIT III - TRAFFIC DESIGN AND VISUAL AIDS

Intersection Design - channelization, Rotary intersection design – Signal design – Coordination of signals — Grade separation - Traffic signs including VMS and road markings – Significant roles of traffic control personnel - Networking pedestrian facilities & cycle tracks.

PART - A

Q.No	Questions	BT	Competence
1.	Define an intersection.	BT 1	Remembering
2.	Sketch the basic form of at-grade intersections.	BT 1	Remembering
3.	Write the formula to calculate capacity of a rotary.	BT 1	Remembering
4.	Define offset in traffic signal.	BT 1	Remembering
5.	List out any four regulatory signs.	BT 1	Remembering
6.	List the advantages of fixed time signals and vehicle actuated signals.	BT 1	Remembering
7.	What are the types of traffic signs?	BT 1	Remembering
8.	What is cycle time? Write the formula to calculate optimum cycle time.	BT 2	Understanding
9.	Write down the importance of traffic signs.	BT 2	Understanding
10.	What is meant by 'variable sign message' in traffic visual aids?	BT 2	Understanding
11.	What are the different types of road markings available?	BT 2	Understanding
12.	What is meant by guard rails?	BT 3	Applying
13.	Write down any two advantages of vehicle actuated signals	BT 3	Applying
14.	What are the objectives of area traffic control system?	BT 3	Applying
15.	Draw a neat sketch presenting different elements in a rotary.	BT 4	Analyzing
16.	A T- junction has a yearly flow of 300 vehicles per hour on the south arm and 2400 vehicles per hour on the east and west arms. What should be the ratio of approach width, length and green time of the arms?	BT 4	Analyzing
17.	Determine the ratio of approach width, length and green time of the arms. A T- junction has a yearly flow of 270 vehicles per hour on the south arm and 2200 vehicles per hour on the east and west arms.	BT 4	Analyzing
18.	List out any four demerits of a rotary intersection in traffic engineering.	BT 4	Analyzing
19.	Distinguish between Cycle and Phase in traffics signal design.	BT 4	Analyzing
20.	What are the drawbacks of conventional round about?	BT 5	Evaluating
21.	Explain signal coordination and area traffic control.	BT 5	Evaluating
22.	Give any four sketches of warning signs.	BT 5	Evaluating
23.	What is meant by Parking Accumulation?	BT 6	Creating
24.	What are the main traffic control aids?	BT 6	Creating
25.	Discuss about intersection and interchange in traffic design.	BT 6	Creating

PART - B

1.	What is an intersection? Explain in detail, the two broad classifications of intersections	BT 1	Remembering
2.	i. Write the recommended width of cycle tracks as per IRC. (6) ii. Explain the advantages and the disadvantages of rotary intersection (7)	BT 1	Remembering
3.	(a) List out the advantages of traffic signals. (4) (b) What is meant by saturation flow? (4) (c) State the need for signal co-ordination (5)	BT 1	Remembering
4.	i. Write the various advantages and disadvantages of different types of signals. (7) ii. With a neat diagram of a four arm rotary intersection explain the design aspects of its elements. (6)	BT 1	Remembering

<table>
<tr><td>5.</td><td>Explain the various types of traffic signals and their functions. How are the signal timings decided?</td><td>BT 2</td><td>Understanding</td></tr>
<tr><td>6.</td><td>Explain in detail, the various types of road markings commonly used with neat sketches.</td><td>BT 2</td><td>Understanding</td></tr>
<tr><td>7.</td><td>A fixed type 2 – phase signal is to be provided at an intersection having a North – South and an East – West road, where only straight ahead traffic is permitted. The design hour flows from the various arms and the saturation flows for these arms are given in the following table. Design the traffic signal with timing diagram and phase diagram. Assume relevant data
<table>
<tr><th>Details of flow</th><th>North</th><th>South</th><th>East</th><th>West</th></tr>
<tr><td>Design hour flow (PCU/hour)</td><td>810</td><td>380</td><td>770</td><td>950</td></tr>
<tr><td>Saturation flow (PCU/hour)</td><td>2500</td><td>1900</td><td>2800</td><td>3100</td></tr>
</table></td><td>BT 2</td><td>Understanding</td></tr>
<tr><td>8.</td><td>A rotary is proposed in a rural area at a location where two four -lane divided roads meet each other. The peak hour traffic flow is as follows: Design a rotary for the intersection.
<table>
<tr><td rowspan="2">Name of the Arm feeding traffic to the Intersection</td><td colspan="3">Traffic Flow in PCUs/hour</td></tr>
<tr><td>Left</td><td>Straight</td><td>Right</td></tr>
<tr><td>N</td><td>350</td><td>450</td><td>250</td></tr>
<tr><td>E</td><td>450</td><td>490</td><td>300</td></tr>
<tr><td>S</td><td>275</td><td>400</td><td>390</td></tr>
<tr><td>W</td><td>390</td><td>500</td><td>275</td></tr>
</table></td><td>BT 3</td><td>Applying</td></tr>
<tr><td>9.</td><td>The average normal flow of traffic on cross roads A and B during design period are 400 PCU per hour and 250 PCU per hour respectively, the saturation flow values on these roads are estimated as 1250 PCU per hour and 1000 PCU per hour respectively. The all – red time required for pedestrian crossing is 12 sec. Design two phase traffic signal with sketch by Webster’s method.</td><td>BT 3</td><td>Applying</td></tr>
<tr><td>10.</td><td>The average normal flow of traffic on cross roads A and B during design period are 600 PCU per hour and 400 PCU per hour respectively, the saturation flow values on these roads are estimated as 2200 PCU per hour and 1000 PCU per hour respectively. The all – red time required for pedestrian crossing is 12 sec. Design two phase traffic signal with neat sketch.</td><td>BT 4</td><td>Analyzing</td></tr>
<tr><td>11.</td><td>Explain in detail, the various design elements of rotary type of intersection based on IRC standards with neat sketches.</td><td>BT 4</td><td>Analyzing</td></tr>
<tr><td>12.</td><td>Explain the concept of traffic Signal Co-ordination on major routes in an urban area.</td><td>BT 4</td><td>Analyzing</td></tr>
<tr><td>13.</td><td>What are the advantages and disadvantages of grade separated intersections?</td><td>BT 5</td><td>Evaluating</td></tr>
<tr><td>14.</td><td>Explain in detail, the channelization of intersection and its purposes with neat sketches.</td><td>BT 6</td><td>Creating</td></tr>
<tr><td colspan="4">PART - C</td></tr>
</table>

<table>
<tr><td>1.</td><td>Explain in brief with various types of carriage way markings and its purpose with IRC standards.</td><td>BT 5</td><td>Evaluating</td></tr>
<tr><td>2.</td><td>Write with neat sketches of pedestrian facilities and cycle tracks in urban areas as per IRC standards.</td><td>BT 2</td><td>Understanding</td></tr>
<tr><td>3.</td><td>A fixed time two phase signal is provided at an intersection having a north – south and an East –West road where only straight – ahead traffic is permitted.
<table><tr><td>Details of flow</td><td>North</td><td>South</td><td>East</td><td>West</td></tr><tr><td>Design hour flow</td><td>810</td><td>380</td><td>770</td><td>950</td></tr><tr><td>Saturation flow</td><td>2500</td><td>2500</td><td>2500</td><td>2500</td></tr></table></td><td>BT 1</td><td>Remembering</td></tr>
<tr><td>4.</td><td>A two-phase traffic signal is to be installed at a right angled crossing of two city streets. The site is average and the approaches are 16m wide between kerbs. The design hour traffic volumes in PCU's are given in Table,
<table><tr><td>From</td><td>To</td><td>Flow in PCU's per hour</td></tr><tr><td rowspan="3">N</td><td>E</td><td>485</td></tr><tr><td>S</td><td>853</td></tr><tr><td>W</td><td>209</td></tr><tr><td rowspan="3">E</td><td>S</td><td>257</td></tr><tr><td>W</td><td>935</td></tr><tr><td>N</td><td>565</td></tr><tr><td rowspan="3">S</td><td>W</td><td>362</td></tr><tr><td>N</td><td>964</td></tr><tr><td>E</td><td>560</td></tr><tr><td rowspan="3">W</td><td>N</td><td>572</td></tr><tr><td>E</td><td>690</td></tr><tr><td>S</td><td>408</td></tr></table>Design the two phase signal with its timing and phasing diagrams by making suitable assumption.</td><td>BT 3</td><td>Applying</td></tr>
</table>

UNIT IV- TRAFFIC SAFETY AND ENVIRONMENT

Road accidents – Causes, effect, prevention, and cost – Street lighting – Traffic and environment hazards – Air and Noise Pollution, causes, abatement measures – Promotion and integration of public transportation – Promotion of non-motorized transport.

PART - A

Q.No	Questions	BT Level	Competence
1.	List any four uses of accident data.	BT 1	Remembering
2.	Define noise pollution.	BT 1	Remembering
3.	How is glare reduced?	BT 1	Remembering
4.	Write down the techniques used for prevention of road accidents.	BT 1	Remembering
5.	Write the advantages of integrating public transportation.	BT 1	Remembering
6.	Write the principle adopted for tidal flow operation.	BT 1	Remembering
7.	List out the various environmental hazards due to road traffic	BT 1	Remembering

8.	What are the needs for street lighting?	BT 1	Remembering
9.	What is meant by Integrated public transportation?	BT 2	Understanding
10.	What are the various types of conflicts at intersections?	BT 2	Understanding
11.	Give the conflict point sketch of one-way regulation on both roads.	BT 2	Understanding
12.	What are the causes for traffic related air pollution	BT 2	Understanding
13.	Draw a diagram of a staggered T Junction and indicate how it is safer than a four arm junction	BT 3	Applying
14.	What are the factors influence night visibilities?	BT 3	Applying
15.	Draw the different types of luminaries' distribution.	BT 3	Applying
16.	Identify the cause of accidents by pedestrians.	BT 3	Applying
17.	Write the various lamps used for highway lighting.	BT 4	Analyzing
18.	What are the objectives of accident studies?	BT 4	Analyzing
19.	Differentiate between Silhouette and reverse silhouette.	BT 4	Analyzing
20.	What are the factors that influence night visibility of the driver?	BT 4	Analyzing
21.	Give the conflict point of two way streets and mention the points.	BT 5	Evaluating
22.	Draw a neat sketch for the lighting layouts for median lighting.	BT 5	Evaluating
23.	What are causes for traffic related noise generation	BT 6	Creating
24.	What are the merits of encouraging walk and non-motorized mode?	BT 6	Creating
25.	Build points on Speed change lanes.	BT 6	Creating
	PART - B		
1.	Write briefly the different factors causing accidents.	BT 1	Remembering
2.	Write in detail about the skid resistance value and methods of measurement skid resistance	BT 1	Remembering
3.	Write in detail about Noise Pollution, causes, abatement measures.	BT 1	Remembering
4.	Write in detail about Promotion and integration of public transportation	BT 1	Remembering
5.	What are the various measures of engineering that may be useful to prevent accidents?	BT 2	Understanding
6.	Explain the factors affecting street lightening	BT 2	Understanding
7.	What are the effects of air pollution caused by various transport?	BT 2	Understanding
8.	Explain in brief the various causes of road accidents with preventive measures.	BT 3	Applying
9.	i. Explain briefly the probable causes for accidents on rural roads and suggest the preventive measures required to reduce accident occurrence. (6) ii. Explain the impact of vehicular emission on human beings and vegetation. (7)	BT 3	Understanding
10.	i. Design a lighting system for the following condition (6) 1. Street width = 15m 2. Mounting height = 7.5 m 3. Lamp sixe =6000 lumen 4. Luminaries type =II 5. Calculate the spacing between lighting units to produce average lux = 6.0 ii. Draw the various lighting layouts. (7)	BT 4	Applying
11.	State the benefits of highway lightening.	BT 4	Analyzing
12.	Explain in detail about various methods of highway lightning as per IRC	BT 4	Analyzing

13.	i. When does the skidding happen? (6) ii. Explain in detail about various factors affecting skid resistance.(7)	BT 5	Evaluating
14.	Explain about the Skidding effect for road users and its impact on traffic.	BT 6	Creating
	PART - C		
1.	Write in brief the about air Pollution hazards and its abatement measure in traffic and Environmental impact study.	BT 1	Remembering
2.	Explain the effect of accidents in detail.	BT 2	Understanding
3.	Enumerate the various points to be considered to promote public transportation and non-motorized transportation.	BT 4	Analyzing
4.	Explain the collision and condition diagram for four arm intersection	BT 6	Creating

UNIT V- TRAFFIC MANAGEMENT			
Area Traffic Management System - Traffic System Management (TSM) with IRC standards –- Traffic Regulatory Measures-Travel Demand Management (TDM) – Direct and indirect methods – Congestion and parking pricing – All segregation methods- Coordination among different agencies – Intelligent Transport System for traffic management, enforcement and education.			
PART - A			
Q.No	**Questions**	**BT Level**	**Competence**
1.	List out the various types of Travel Demand Management (TDM) techniques.	BT 1	Remembering
2.	List the principle methods of tidal flow operation	BT 1	Remembering
3.	List any two advantages of closing side streets	BT 1	Remembering
4.	Define - Traffic Calming	BT 1	Remembering
5.	Define Chicane	BT 1	Remembering
6.	Define – ITS & List out the Uses.	BT 1	Remembering
7.	Explain Transportation System Management (TSM)?	BT 2	Understanding
8.	Summarize the advantage of exclusive bus lanes.	BT 2	Understanding
9.	What is the PCU value for buses in BRT approach?	BT 2	Understanding
10.	Illustrate what is meant by traffic regulations?	BT 2	Understanding
11.	Classify various methods on restrictions of turning movements.	BT 2	Understanding
12.	Identify the need for proper signaling?	BT 3	Applying
13.	Explain What is meant by tidal flow operation in Traffic Management?	BT 3	Applying
14.	Explain when would you suggest Reversible Lanes?	BT 3	Applying
15.	Identify the Condition for tidal flow operation.	BT 4	Analyzing
16.	Examine the purpose of one - way streets.	BT 4	Analyzing
17.	List the disadvantages of one - way streets.	BT 4	Analyzing
18.	What is known as congestion pricing?	BT 4	Analyzing
19.	List the requirements of good pricing system.	BT 4	Analyzing

20.	Justify the conditions for prohibiting right turn movement?	BT 5	Evaluating
21.	What is Aggregate and Disaggregate Models in Traffic Forecasting?	BT 5	Evaluating
22.	Write the importance of Traffic management.	BT 5	Evaluating
23.	Compile the problems posed by turning traffic?	BT 6	Creating
24.	Define Traffic segregation & what for it is done.	BT 6	Creating
25.	Discuss the Scope of traffic management.	BT 6	Creating
	PART - B		
1.	Write short notes on few of the traffic management measures: a) Tidal flow operation (4) b) Exclusive bus lane (4) c) Restriction on turning movement (5)	BT 1	Remembering
2.	Write briefly on the following: a) Locations where parking is prohibited (4) b) Peripheral parking schemes (4) c) Traffic calming (5)	BT 1	Remembering
3.	i. Write a brief notes on: 1. Vehicle licensing (4) 2. Tidal Flow (4) ii. Define briefly the strategies adopted to avoid right turning at intersections. (5)	BT 1	Remembering
4.	Write in detail about i. Traffic congestion studies (7) ii. Effect of traffic congestion (6)	BT 1	Remembering
5.	Explain what is the significance of traffic management? Write the various travel demand management techniques commonly used in managing traffic on roads.	BT 2	Understanding
6.	Discuss in detail the various methods of traffic regulatory measures in traffic management.	BT 2	Understanding
7.	Explain the following: i. Intelligent Transport system for traffic management (7) ii. Traffic segregation methods (6)	BT 2	Understanding
8.	Explain in detail about i. Traffic System Management (TSM) (7) ii. Traffic enforcement and education (6)	BT 3	Applying
9.	Explain briefly on the following: a) Speed breakers (6) b) Rumble strips (7)	BT 3	Applying
10.	Illustrate the applications of ITS with reference to Indian conditions	BT 4	Analyzing
11.	List any two methods of forecasting traffic conditions for peri-urban area.	BT 4	Analyzing
12.	i) Illustrate briefly when road and how road pricing could be adopted for urban areas. (7) ii)Illustrate briefly the need and advantages of staggering of working hours in urban areas. (6)	BT 4	Analyzing

13.	Sketch with conflicts points for pedestrians and vehicles and explain them	BT 5	Evaluating
14.	Elaborate the advantages & Disadvantages of one-way streets.	BT 6	Creating

PART – C

1.	How the promotion and integration of public transport can be done?	BT-1	Remembering
2.	Explain in detail about the different types of Traffic Demand Management Techniques	BT-2	Understanding
3.	Explain in brief the significance of promotion and integration of Mass/Public transportation in urban areas in specific.	BT 5	Evaluating
4.	Write a brief note describing the advantages of having exclusive bus lane and indicate when it is recommended.	BT-6	Creating