



Important Instructions to examiners:

- 1) The answers should be examined by key words and not as word-to-word as given in the model answer scheme.
- 2) The model answer and the answer written by candidate may vary but the examiner may try to assess the understanding level of the candidate.
- 3) The language errors such as grammatical, spelling errors should not be given more importance. (Not applicable for subject English and Communication Skills).
- 4) While assessing figures, examiner may give credit for principal components indicated in the figure. The figures drawn by candidate and model answer may vary. The examiner may give credit for any equivalent figure drawn.
- 5) Credits may be given step wise for numerical problems. In some cases, the assumed constant values may vary and there may be some difference in the candidate's answers and model answer.
- 6) In case of some questions credit may be given by judgment on part of examiner of relevant answer based on candidate's understanding.
- 7) For programming language papers, credit may be given to any other program based on equivalent concept.

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Marks

	Marks
1. a) Attempt any THREE of the following.	12
i) Define the terms : 1. Goods Vehicle 2. Conductor 3. Fare 4. Unladen weight	04
Answer : 1. Goods Vehicle: It means any motor vehicle constructed or adopted to use upon the road solely for carriage of the goods. Such vehicle can be used on contract or under hire purchase agreement.	01
2. Conductor: In relation to stage carriage Conductor is a person engaged in collecting fares from passengers, regulating their entrance into or exit from, the stage carriage and performing such other functions as may be prescribed.	01
3. Fare It means the sum payable for a daily or seasonal ticket in respect of the hire of a contract or Stage carriage.	01
4. Unladen weight: The weight of a vehicle or trailer including all equipment ordinarily used with the vehicle or trailer when working, but excluding the weight of a driver or attendant; and where alternative parts or bodies are used the unladen weight of the vehicle means the weight of the vehicle with the heaviest such alternative part or body	01
ii) List of documents required for permanent license.	04
Answer: Documents required for getting Permanent Driving License- (Each document carry 1/2 mark) I. Application for a driving license in Form 4. II. Following documents should be attached with Form 4 - 1. Learner's license, 2. Appropriate fee for the test of competence to drive and issue of license, 3. Three copies of the applicant's recent passport size photograph,	04



Summer – 15 EXAMINATION

Subject Code: 17616

Model Answer

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<p>4. Medical certificate in Form 1-A, 5. Proof of age (copy of any one) i. School Leaving Certificate (LC) ii. SSC Board Certificate iii. PAN card, 6. Proof of address (copy of any one) i. Electricity Bill ii. Telephone bill iii. Election Voters ID card 7. Driving school's certificate in Form 5 for all transport vehicles, 8. All valid documents of the vehicle on which the test to be conducted (Registration Certificate, Insurance Certificate, Tax Card, PUC Certificate, Fitness Certificate in case of Transport Vehicle)</p>																												
<p>iii) State the meaning of following registration marks MH-13, MH-12, MH-14, MH-10</p>	04																											
<p>Answer: Following Registration marks indicates the Regional Transport Office in which vehicle has been registered. (<i>Each registration mark meaning carries 1 mark</i>)</p> <ul style="list-style-type: none"> • MH - State Code of Maharashtra • 13, 12, 14, 10 – Registration Authority code <ol style="list-style-type: none"> 1. MH-13: Registration Mark for Solapur region. 2. MH-12: Registration Mark for Pune region. 3. MH-14: Registration Mark for Pimpri Chinchwad region. 4. MH-10: Registration Mark for Sangli region. 	04																											
<p>iv) State any four vehicles which are liable for tax exemption with percentage of exemption.</p>	04																											
<p>Answer: Vehicles exempted from the BMV Tax Act Sec.13(<i>Consider any four points, each point carry 1 mark</i>)</p>																												
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Sr. No</th> <th style="width: 60%;">Particulars</th> <th style="width: 30%;">% of exemption</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Vehicle belonging to State Govt., Local self Govt., Municipal Corporation</td> <td>100 %</td> </tr> <tr> <td>2</td> <td>Ambulance working on no loss no profit basis</td> <td>100 %</td> </tr> <tr> <td>3</td> <td>Invalid carriage</td> <td>100 %</td> </tr> <tr> <td>4</td> <td>Vehicle solely used for transportation of school children and owned by school or private person</td> <td>2/3 of annual rate</td> </tr> <tr> <td>5</td> <td>Vehicle belonging to Orchestra, Tamasha Mandal, Drama, Theatre, etc.</td> <td>2/3 of annual rate</td> </tr> <tr> <td>6</td> <td>Vehicle used to carry school children and other contracts, owned by private person</td> <td>1/3 of annual rate</td> </tr> <tr> <td>7</td> <td>Vehicle under non use</td> <td>100 %</td> </tr> <tr> <td>8</td> <td>Tractors and trailers used for agriculture purpose</td> <td>100 %</td> </tr> </tbody> </table>	Sr. No	Particulars	% of exemption	1	Vehicle belonging to State Govt., Local self Govt., Municipal Corporation	100 %	2	Ambulance working on no loss no profit basis	100 %	3	Invalid carriage	100 %	4	Vehicle solely used for transportation of school children and owned by school or private person	2/3 of annual rate	5	Vehicle belonging to Orchestra, Tamasha Mandal, Drama, Theatre, etc.	2/3 of annual rate	6	Vehicle used to carry school children and other contracts, owned by private person	1/3 of annual rate	7	Vehicle under non use	100 %	8	Tractors and trailers used for agriculture purpose	100 %	04
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<p>b) Attempt any ONE of the following:</p>	06																											
<p>i) Explain the procedure to obtain Learner's license.</p>	06																											
<p>Answer: Procedure for obtaining learners license-</p>																												



i) **Minimum Age Requirements:**

1. Age between 16 and 18 years for motor cycle without gear with engine capacity not exceeding 50 cc
2. Age 18 Years and above for motor cycle with gear or light motor vehicle.
3. Age 20Years for Transport Vehicles and one year driving experience of light motor vehicle

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ii) An application for a driving license shall be made in **Form 2**.

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iii) **Documents required** –Following documents should be attached with an application for the grant or renewal of a learner's license

1. A medical certificate in Form 1
2. A medical certificate in Form 1-A (*for transport vehicle*)
3. three copies of the applicant's recent passport size photograph,
4. Appropriate fee – Rs. 30/-
5. In case of an application for transport vehicle, the driving license held by the applicant.
6. Proof of age (copy of any one)
 - i. School Leaving Certificate
 - ii. SSC Board Certificate
 - iii. PAN card,
 - iv. Birth certificate
7. Proof of address (copy of any one)
 - i. Electricity Bill / Telephone bill
 - ii. Election Voters ID card
 - iii. Passport
 - iv. LIC Policy
8. The consent/declaration letter of the parents/guardian in writing for applicant under the age of 18 years to drive motorcycle without gear.

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iv) **Preliminary test** - Written test will be conducted for the applicants. This test will be of multiple choice type questions.

• Subjects for Preliminary Test is as -

1. The traffic signs, traffic signals and the rules of the road regulations;
2. The duties of a driver when his vehicle is involved in an accident resulting in the death or bodily injury to a person or damage to property of a third party;
3. The precautions to be taken while passing an unmanned railway crossing; and
4. The documents he should carry with him while driving a motor vehicle.

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v) After fulfilling all above requirements, if satisfied, the licensing authority may issue Learner's license in Form 3.

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Summer – 15 EXAMINATION

Subject Code: 17616

Model Answer

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ii) Differentiate between STA & RTA.			06
Answer: Difference between STA and RTA. (Consider any six points, each point carry 1 mark)			
No	STA	RTA	
1	It is the State Transport Authority	It is the Regional Transport Authority	
2	STA give effect to the directives issued under section 67 to control road transport by state government throughout the state.	RTA decides the policies to control road transport as per the directives of STA throughout the region.	
3	To co-ordinate and regulate the activities and policies of the Regional Transport Authorities	To fix the fares for the auto-rickshaws, taxies etc. from time to time throughout the region	
4	To conduct not less than two meetings in a year	To conduct not less than six meetings in a year and do the business regarding control of road transport	
5	Chairman- Transport secretary	Chairman- Divisional/Revenue Commissioner	06
6	Members- I.G.(Police), Chief Engineer of PWD, Few MLA's and Two non-government Representatives	Members- Deputy I.G.(Police), Superintending Engineer of PWD, Few MLA's and One non-government Representative	
7	Secretary – Transport commissioner or Joint transport commissioner	Secretary – Regional transport officer	
8	To consider applications for grant, renewal, and transfer of permit on interstate routes	To consider applications for grant and renewal of license and permit within the region	
2. Attempt any FOUR of the following			16
a) What are duties and responsibilities of a conductor?			04
Answer: Duties and responsibilities of a conductor are as follows. (Consider any 04 points, each point carry 1 mark)			
1. He should not allow any person or thing to be placed or to be in the space reserved for the driver seat in such a way as to interfere a clear vision of the road and control of vehicle.			
2. He should not smoke on duty.			
3. He should be clearly dressed as specified by the Regional Transport Authority and should behave in manners with the passengers.			
4. He should not unduly delay on the journey			
5. In case of mechanical brake - down or other causes beyond his control he should arrange to convey the passengers to their destinations in some other vehicle.			
6. He should have regard to his duties and should follow the rules and regulations.			04
7. He should not allow any person to whom he believes to suffering from any infections or contagious disease to be carried in vehicle.			
8. He should carry his license while driving a vehicle and should produce the same for inspection when asked for by a police officer of concerned authority in uniform.			
9. He should issue ticket of desired stage.			
10.He should collect correct amount of fare.			



<p>11.He should make report in bus stand. 12.He should check documents for concession in fare. 13.He should help to disabled person to get in or exit from the bus. 14.He should ring the bell as necessary. 15.In case of accident, he should provide first aid to passengers. 16.At any place, where hamal (Collie) is not present, he should help the passenger to carry the luggage inside the vehicle.</p>	
<p>b) List any four types of permits and explain any one permit.</p>	<p>04</p>
<p>Answer: Types of Permits. (Consider any four types of permit, each type carries ½ marks. Explanation of any one type of permit carries 2 marks)</p> <ol style="list-style-type: none">1. Stage carriage permit2. Contract carriage permit3. Private service vehicle permit4. Goods carriage permit5. National permit6. All India Tourist permit <p>Stage Carriage Permits:</p> <ul style="list-style-type: none">• State Transport Authority announces scheme for grant of stage carriage permit from time to time, depending upon the requirement of buses on different route of the city.• These permits are issued under section 72 of Motor Vehicles Act, 1988.• The permit holders can operate their bus under their allotted routes for picking up passengers from one place to another. All private stage carriage buses come under this category <p>Contract Carriage Buses Permits:</p> <ul style="list-style-type: none">• This is the most common type of permit used for hire and reward purpose.• The permit holder can operate under a contract with his client for a fixed destination within state or outside the state.• For this an agreement should be executed between the clients and the operators and the list of passengers should also be available with the driver of bus.• The permit holder cannot pick passengers other than those mentioned in the list.• Such types of buses are also known as Chartered Buses.• These permits are issued under section 74 of Motor Vehicles Act, 1988.• The applicant has to apply on form PCA along with other formalities. <p>Temporary permit</p> <ul style="list-style-type: none">• A temporary permit is issued by STA under Section 87 of Motor Vehicles Act, 1988 to transport vehicle for a limited period, enabling the vehicle to go outside the state for the following reasons:-<ol style="list-style-type: none">1. For the conveyance of passengers on special occasions such as to and from fairs and religious gatherings, or2. For the purposes of a seasonal business, or3. To meet a particular temporary need, or Pending decision on an application for the renewal of a permit.	<p>02</p> <p>02</p>



<p>Goods Carrier Permits:</p> <ul style="list-style-type: none">• Such permit is granted under Section 79 of the Motor Vehicles Act, 1988, to a goods vehicle operating within the state.• Permits granted to a particular vehicle for carrying a particular load has to be plied for that particular area only. <p>National Permits:</p> <ul style="list-style-type: none">• National permits are issued to goods vehicles to enable them to go outside the home state.• National Permit is issued for a minimum of four continuous states (including the home state).• For obtaining such permits the maximum age of a particular vehicle should not exceed 12 years. However, maximum age in case of a multi-axle vehicle should not exceed 15 years.• For the issue of National Permit, applicant has to apply on form 46 and 48 along with other formalities <p>All India Tourist Permit (AITP):</p> <ul style="list-style-type: none">• This permit is given to luxury buses which have white colour with a blue ribbon of five centimeters width at the center of exterior of the body and the word 'Tourist' shall be inserted on two sides of the vehicle within a circle of sixty centimeters diameter.• A tourist permit shall be deemed to be invalid from the date on which the motor vehicle covered by the permit completes 9 years in the case of Motor Cab and 8 years where the motor vehicle is other than a motor cab, unless the motor vehicle is replaced by another, the latter vehicle shall not be more than 2 years old on the date of such replacement.• The seating layout shall be two and two or one and two or one and one on either side, all seats facing forwards.• The Vehicles should also have other facilities like public address system, drinking water, push full back seats, fans, curtains, a separate driver cabin etc.• The applicant has to apply on form 45 & 48 along with other formalities. <p>Every motor vehicle or motor cab under the Authorization Certificate issued under these rules shall exhibit the words 'All India Tourist Permit' on the back of the motor vehicle in contrasting colours, so as to be clearly visible</p>	
<p>c) Explain types of vehicle insurance.</p>	04
<p>Answer</p> <p>Motor vehicle Insurance is an agreement between the insurer and the insured wherein the insurer provides financial cover for the vehicle and the insured in return pays specific premium annually. It provides protection for your vehicle against the financial loss and liability that could result as a part of accident or theft.</p> <p>Following are the two types of vehicle insurance</p> <p>1) Comprehensive insurance - Third Party Insurance is a statutory requirement. The person or property other than the vehicle and vehicle owner are safeguarded under this insurance. Personal injuries and personal vehicle damages will not be covered by this policy. For two wheeler vehicles we can take this policy for life time. For other vehicles this policy has to be renewed annually. This is the cheapest available motor vehicle insurance policy. This policy can be renewed two months in advance of its expiry.</p>	02



<p>2) Third Party insurance – It means the person or property other than the vehicle and vehicle owner are safeguarded under this insurance. It is compulsory to all vehicles to safeguard the interest of pedestrians. Personal injuries and personal vehicle damages will not be covered by this policy. For two wheelers, we can take this policy for life time. For other vehicles this policy has to be renewed annually.</p>	02																																																
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<p>iv) Time Table The schedule or detailed plan of arrival and departure of buses to be operated by the depot is known as time table.</p>	01																																																
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		establishment.		
16.	Form 15	Register showing the driving hours spend in the a trainees		
17.	Form 16	Form of application a renewal of trade certificate		
18.	Form 17	Form of trade certificate		
19.	Form 18	Intimation of loss or destruction of a trade certificate an application for duplicate		
20.	Form 19	Register to be maintained by the holder of trade certificate		
21.	Form 20	Form of application for registration of motor vehicles		
22.	Form 21	Sale certificate		
23.	Form 23	Form of certificate of registration		
Note – Credit shall be given to any other appropriate form concerned in this regard.				
f) What are the basic factors considered in crew scheduling.				04
Answer: Factors to be considered in crew scheduling – (Any Four points 01 mark each)				
1) Hours of works : Section 13 of the motor Transport workers Act lay down that no adult motor transport worker shall be required or allowed to work or more than eight hours in any day and for 48 hours in any week.				
2) Daily and weekly interval for rest: The hours of daily works should be fixed in such way that no transport worker is allowed and required to work more than 5 hours at a stretch before he has a rest interval for at least ½ hour.				
3) Spread over : The hours of work of a motor transport worker should not spared over more the 12 hours in any day.				04
4) Spells of duty: The hour of work of motor transport worker should not be split into more than two spells on any day.				
5) Handling & taking overtime: It includes - the time spent in subsidiary works, Periods of mere attendance at terminals of less than fifteen minutes.				
3. Attempt any FOUR of the following:				16
a) What are the factors considered in selection of site for a depot?				04
Answer: Following factors should be considered in selection of site for a depot (<i>any four points, 01 mark each</i>)				
1. The size of a bus depot - Size of bud depot is usually stated in terms of the number of buses that it can accommodate.				
2. Location of bus depot - Site should be near to the bus station (To reduce dead km)				
3. Availability of Land - Approximate area required for a depot for 100 full-sized buses will be 2 hectares or 20,000 square meters, including buildings.				04
4. Environmental considerations - The activities of a bus depot and workshop can have a significant impact on the environment. Pollution from exhaust fumes and excessive noise from the vehicles themselves and from other workshop activities				



<p>5. Movement of traffic - The main potential problems are traffic jamming caused by buses entering and leaving the depot, 6. Volume of operations. 7. Site should not be much away from city town or village. 8. Availability of water, electricity, telephone, post office etc. 9. It should be free from fare of flood water logging. 10. The location should be away from tank bed. 11. High Tension lines should not pass over the site</p>	
<p>b) What are the factors considered in buying new vehicle?</p>	<p>04</p>
<p>Answer: Factors to be considered for buying new car are as follows (<i>any 04 points, 01 mark each</i>)</p> <p>a) Checkout the features and quality of new vehicle –</p> <ul style="list-style-type: none">• Checkout the features offered and additional optional fittings, which suits your lifestyle.• Checkout the quality factors of new vehicle like mileage, fuel storage capacity, option of using alternative fuels like CNG/LPG, also safety features like airbags, antilock braking system etc <p>b) Ex-showroom price and on road price-</p> <ul style="list-style-type: none">• There is huge difference between on-road price and ex-showroom price.• Ex-showroom price is the basic price which does not include Insurance, RTO registration charges, extended warranty if any and sometimes the Municipality Road tax etc. After adding all these you will get on road price. <p>c) Use of vehicle</p> <ul style="list-style-type: none">• Select the vehicle on basis of for what purpose you are buying a new vehicle (Personal use, Commercial use, expected seating capacity etc.) <p>d) Inspecting the vehicle</p> <ul style="list-style-type: none">• Before purchasing the vehicle inspect the vehicle for whether the features are as per your demands or not. <p>e) Gather expert reviews –</p> <ul style="list-style-type: none">• Read expert comments and reviews on the vehicle, you are buying.• Do the comparative study with other same class of vehicles to checkout for added benefits.• Enquire about extended warranty as well as regular service contract. <p>f) Test drive the vehicle –</p> <ul style="list-style-type: none">• Analyze and be sure that the vehicle has characteristics that you are looking for.• Inspect and feel carefully all the interior and exterior such as bonnet, of vehicle.• Checkout your vehicle thoroughly including braking, electrical, steering system etc before driving at home. <p>g) When and where to buy</p> <ul style="list-style-type: none">• Vehicles prices hike up and down often, Ex- Showroom price & tax applicable can also varied as per location hence it's important to decide when and where to buy a vehicle. <p>h) Closing the deal – Vehicles prices hike up and down often, so negotiate the price of the vehicle. Remember the Actual price of the car may be far less than the Advertised price so bargain as much as possible.</p>	<p>04</p>



c) List any four documents used in Transportation. Explain Truck history card.	04
<p>Answer: (Consider any 04 documents, each document carries 1/2 mark)</p> <p>Documents used in Transportation are -</p> <ol style="list-style-type: none">1. Log Book2. Trip operational sheet (TOS)3. Vehicle ledger4. Truck history card5. Monthly Operational Performance Statement (MOPS)6. Goods consignment note7. Trip sheet <p>Truck History Card:</p> <p>The performance of truck is evaluated from the truck history card this card gives detailed information about the mileage, tax paid, no. of repairs etc.</p> <p>Thus the truck history card helps in deciding whether scrap the truck or not.</p>	02
d) Explain the working of MSRTC.	04
<p>Answer: Maharashtra State Road Transport Corporation (MSRTC) is the state run bus service of Maharashtra, India with approx.16, 000 buses which ferry 7 million passengers daily on 17,000 routes. It is the third largest bus service provider in India and serves routes to towns and cities within Maharashtra and adjoining states.</p> <p>It employs the three tire system for maintaining their buses as Central Workshop, Divisional Workshop and Depots. The work distribution at different levels is as follows-</p> <p>i)Central Workshop-</p> <p>Body building work on new chassis is done in the 3 Central Workshops i.e. Pune, Aurangabad and Nagpur on Ashok Leyland and TATA chassis. The major activities carried out at central workshop are as follows</p> <ul style="list-style-type: none">• Reconditioning of engine, gear box and differential,• Work pertaining to major accidents,• Body building, tyre retreading, and• Work pertaining to retrieval of spare parts etc are <p>ii) Divisional Workshop-</p> <p>MSRTC is having 32 Divisional Workshops located at the Divisional Headquarters wherein vehicle maintenance is carried out as follows.</p> <ul style="list-style-type: none">• Six monthly docking.• RTO passing.• Assembly overhauling.• Accident Repairs. <p>iii)Depot:</p> <p>MSRTC is having 248 Depot Workshops for daily maintenance and running repairs of the buses. The main jobs carried out are as follows.</p> <ul style="list-style-type: none">• Preventive Maintenance - Engine Oil Change, Running repairs, minor repairs etc.• By-Monthly Docking.	01
	01
	01



e) Describe the importance of GPS in traffic management.	04
Answer: Importance of GPS in traffic management is as (<i>Credit shall be given to any other suitable answer</i>) <ol style="list-style-type: none">1. Traffic management is the most important function for any public transport organization. This involves scheduling and planning of routes and at the same time ensuring that the buses run as per the schedule. This becomes difficult in bigger cities where the number of buses involved is very high and all these buses perform repetitive trips. The failure of management in ensuring timely operations has resulted in the bus system becoming unpopular and shift in traffic to the personalized modes of transport.2. However GPS based Intelligent Transport Systems provide the possibility of monitoring the movement of vehicles at an affordable cost. Management of a bus fleet essentially involves ensuring timely arrival and dispatch of buses. It also involves ensuring that the bus touches the entire route points as per schedule.3. In the conventional system some sort of vehicle tracking is carried out manually by posting traffic controllers/timekeepers at some important points. This manual tracking doesn't give 100% coverage, it totally depends on human alertness and is thus prone to errors, it is very expensive, it is not tamper-proof, and the data generated in the form of entries in the registers do not provide themselves easily for computer processing.4. A vehicle tracking system enables the fleet operator to find out the location of the vehicle throughout the journey of the vehicle, against time. Apart from utilizing the data generated by the vehicle tracking system for enforcing the schedule of the bus, this data also provides important inputs for decision making. The system helps for calculation of exact distance travelled in a given time span, calculation of the speed of the bus at a given location, analysis of the time taken by the bus to cover certain distance.5. It becomes a very powerful tool in case the Transport Corporations are hiring private buses, as computation of the distance travelled, based on which payments are made becomes totally objective.	04
f) Give the full form of CRRI, VRDE, PCRA, ARAI.	04
Answer: <ol style="list-style-type: none">1) CRRI : Central Road Research Institute2) PCRA: Petroleum Conservation and Research Association3) CIRT: Central Institute of Road Transport4) VRDE: Vehicle Research and Development Establishment	01 01 01 01
4. a) Attempt any THREE of the following:	12
i) What preparations will you make to sell your vehicle?	04
Answer: Preparation for selling of vehicle: 1. Preparation – When people come to buy car, they will probably make up their minds to buy it or not within the first few seconds. This is based on their first look at the car. Before you advertise	



<p>your car for sale, make sure it looks clean and attractive. This goes beyond just taking it to the car wash.</p> <ol style="list-style-type: none">Wash and vacuum the car.Make sure that vehicle is free from abnormal sounds, dents, scratches.If necessary, make low cost repair or replacement of parts.Wipe the brake dust off the wheel covers and treat the tyres with a tyre gloss product.Thoroughly clean the windows (inside and out) and all the mirrored surfaces.Wipe down the dashboard and empty the ashtrays.Keep all maintenance records ready to show prospective buyers.If necessary, do the servicing.	03
<p>2. Documentation – Following documents are required while selling the vehicle -</p> <ol style="list-style-type: none">Registration certificateTax certificateInsurance certificatePUC certificateNOC certificate	01
<p>ii) State any four advantages smart card.</p>	04
<p>Answer: Following are the advantages smart card (<i>any 04 advantages, 01 mark each</i>)</p> <ol style="list-style-type: none">The Smart-card driving license is electronically issued driving license.The Smart-card driving license is Tamper-proof.The Smart-card driving license is of a plastic card embedded with a microprocessor chip having 64KB memory.All details about the driving license holder (photograph, thumb impression, signature) are recorded on the computerized database and chip.One of the major benefits of Smart-card driving license is cutting down of time required in issuing a driving license.The applicants visiting the RTO office with forms and documents may get the new driving license on the same day.Driving license database is created and different reports are available.Easy to carry in pocket.Smart card is durable.	04
<p>iii) Write names of any four leading automobile manufacturers in India with their product name.</p>	04
<p>Answer: Automobile industries in India with their products. (<i>Consider any four automobile manufacturers with their two products – 1mark each</i>)</p> <p>1] TATA MOTORS Ltd., Pune, Maharashtra.</p> <p>Products:</p> <ul style="list-style-type: none">Medium and heavy commercial vehicles: Prima, Rigid Trucks, Tractor Trailers, Tippers, construction mixer.Intermediate and commercial vehicles: LPT 1109 Turbo, Truck LP 1109 Turbo.Light commercial vehicles: Tata TL 4X4, Tata SFC 410 EX, Tata LPT 712 EX, Tata 207 DI EX- Single cab, Tata 207 DI - Single cab, Tata 207 DI - Crew cab, SFC 407	



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<p>EX Turbo, SFC 407 Turbo Truck, LPT 709 E Turbo Container truck , LPT 407 Turbo Truck, SFC 709 E Aerial lift turbo Truck.</p> <ul style="list-style-type: none">• Small commercial vehicles: Tata ACE HT, Tata ACE EX, SUPER ACE, ACE ZIP.• Passenger Vehicles: Tata nano, Nano BS III, Nano BS IV , Nano CX BS III, Nano CX BS IV Nano LX BS III, Nano LX BS IV, Nano 2012 TVC. Tata Indica Vista, Tata Indica eV2, Indica DLE, Indica DLS, Indica XETA, Indigo Manza, Indigo Ecs, Indigo XL.• Defense Vehicles: 2 Stretcher Ambulance, 4 Stretcher Ambulance, 2KL Water Bowser, 5KL Water Bowser, Short Wheelbase Bus, Long Wheelbase Bus Staff Car, SFC 407 - 1.5 ton 4x4, LPTA 715 - 2.5 ton 4x4 GS role vehicle, SA 1212 - 6 ton 4x4LPTA 1413 - 7 ton 4x4, SAK 1212 - 4.5 cubic meter 4x4 tipper. <p>2] Mahindra & Mahindra Ltd., Nashik/Mumbai, Maharashtra.</p> <ul style="list-style-type: none">• Personal Vehicles -Bolero ,REVA Electric Cars ,Scorpio ,Thar ,Verito ,Xylo, Actyon , Actyon Sports, Chairman W, Korando , Kyron , Rexton II, Rodius , XUV 500.• Commercial Vehicles Alfa, Gio, Mahindra Navistar Trucks, Bolero Maxi Truck, Genio, Loading, Maxximo.• Tourister Buses.• Construction Equipment - Mahindra Earth Master Backhoe Loader.• Tractors: Arjun, Bhoomiputra, Sarpanch, Shaan, Yuvraj. <p>3] Maruti Suzuki India Ltd., Manesar/Gurgaon</p> <p>Products – Maruti 800, Omni, Eeco, Alto, Alto-K10, A-star, Wagon R, Swift, Ritz and Estilo, off-road Gypsy, SUV Grand Vitara, SX4, Swift DZire and Kizashi,</p> <p>4] Hero Motor Corp. Ltd.</p> <p>Products – CD Dawn, CD Deluxe, Pleasure, Splendor+, Splendor NXG, Passion PRO, Splendor Super, Glamour, Splendor PRO, Achiever, CBZ Extreme, Hunk, Krizma, Krizma ZMR.</p> <p>5] Bajaj Auto Ltd., Pune, Maharashtra</p> <p>Products – Two Wheeler- Avenger 220DTS-i,Pulsar 135Ls,Pulsar 220 DTS-i, Pulsar 180 DTS-i, Pulsar 150 DTS- i, Discover 150 DTS-I, Discover 135 DTS-I, Discover 125 DTS-I, Discover 100 DTS-I, Platina 100 CC, Ninja 250 R, Ninja 650 R</p> <p>A) Goods Carriers: GC Max Diesel, GC Max CNG,RE 60</p> <p>B) Passenger Carriers: RE 2S, RE 2S CNG, RE 2S LPG, RE 4S, RE 4S CNG, RE 4S LPG, RE Diesel, RE GDI, Mega Max</p> <p>6] Hyundai Motor India Limited (HMIL)</p> <p>Products – EON, Santro, i 10 1.1 IRDE, i10 1.2L Kappa, Accent, i 20</p>	04
<p>iv) Explain any four basic elements in transport management.</p>	04
<p>Answer: Basic elements in transport management (Any 4 points - each point carry 1 Mark)</p> <p>1. Market potential: It includes - Type of goods/ passengers, Period of use, Probable competition</p> <p>2. Selection of vehicle: It depends upon Type of load, Class of passenger, Type of service.</p> <p>a. Depending upon load to be carried, road conditions, working conditions, type of goods to be carried etc. the appropriate vehicle to be selected. i.e. If a vehicle is to be selected of transporting large loads, the choice will be for high powered vehicles.</p> <p>b. The selection of chassis length mainly depends upon the load to be carried and road conditions. MSRTC has preferred the buses with short length of chassis to run in Konkan</p>	04



region: because the roads in that region are narrow and most of the konkan region consist of ghat section hence to take the turn, the buses with short chassis are preferable than ordinary buses.

3. Organization setup: Govt., Semi Govt., Private.

4. Legal compliance: Documents required as per MVA like

- a. Registration certificate
- b. Tax certificates
- c. Insurance certificate
- d. PUC certificate
- e. Permits etc.

5. Policies of transport organization: Policies towards passengers and employees.

a. **Policies towards passenger:-**

1. Luxury service,
2. Concession Pass for students and senior citizen,
3. Express service on special route,
4. Night service on special route,
5. Vehicles for Special private Tours/Yatras/functions/ Educational tours on public demand,
6. Providing passenger amenities etc.

b. **Policies toward employees –**

1. **Bonus for employees –** Bonus is compensation for the work that the employee has performed in addition to the employee's regular salary or wages for motivational purpose.
2. **Overtime Allowances –** Overtime allowance is admissible for work done in excess of one hour of the prescribed hours of work on any working day and includes work done on Sundays or any other holidays
3. **Health insurance:** To provide the health insurance to the employee and his family to maintain healthy working atmosphere.
4. **Free Travel packages:** The state transport undertaking like MSRTC provides such packages to their employees and their family for specific period per year.
5. **Employee Training:** Transport organizations provide training to employees to upgrade their skills as per need.

b) Attempt any ONE of the following

06

i) Explain vehicle schedule and trip.

06

Answer:

1. Vehicle scheduling:

- It is a trip or trips assigned to be performed by a bus during a day.
- Vehicle schedule fixes the conditions of the vehicle operation on a route throughout the day.
- Since the passenger low flow expresses the transport demand on the line for the entire day, bus schedule give a picture of the movement of vehicles on the route.
- The important aim of a bus schedule is to satisfy the demand for transport combined with efficient use of vehicle resources.



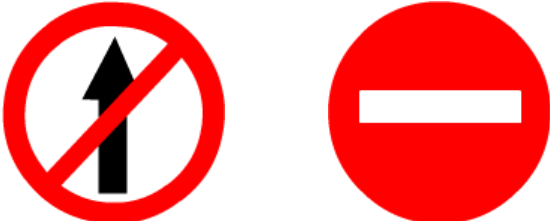
03

2. Trip –

- It means the journey between two terminals i.e. from start of travel to the final destination for

03



<p>carrying passengers or goods on hire or reward.</p> <ul style="list-style-type: none"> • It consists of assessment of running time and Standing time required during a single trip, considering the distance to be covered. • Maintenance time i.e. routine daily checks such as greasing, washing, cleaning, topping up diesel etc. should also considered in this. 	
<p>ii) Draw the sketch for following traffic signs.</p> <ol style="list-style-type: none"> 1. No Parking 2. Right hand curve 3. No Entry 	06
<p>Answer: (Each sign carry two marks)</p> <ol style="list-style-type: none"> 1. No Parking  <ol style="list-style-type: none"> 2. Right hand curve  <ol style="list-style-type: none"> 3. No entry- (any one sign) 	02 02 02
<p>5. Attempt any FOUR of the following:</p>	16
<p>a) Write the necessity of TOS and truck history card.</p>	4
<p>Answer: necessity of</p> <ol style="list-style-type: none"> 1. Trip Operation sheet – Trip Operation sheet gives detailed information about a trip like loading (Dispatching) and unloading (destination) points, distance between stations, number of days taken for journey, Number of idle days, Fuel consumption, lubrication consumption, Repairs and spares, miscellaneous accessories, Fines and expenses incurred in journey, Commissions and general expenses and Government and municipal charges etc. 2. Truck History Card: The performance of truck is evaluated from the truck history card. This card gives detailed information about the mileage, tax paid, no. of repairs etc. Thus the truck history card helps in deciding whether scrap the truck or not. 	02 02



<p>b) Write the procedure for freight calculation for hiring truck.</p>	04
<p>Answer: The freight charges are calculated after considering all the expenses incurred with the transportation of goods. Mostly operating charges and fixed charges are taken into account while calculating the freight.</p>	
<p>a) Operating charges.</p> <ol style="list-style-type: none">1. Diesel cost = $\frac{\text{Number of kilometer} \times \text{Cost of 1 litre diesel}}{\text{Kilometer per liter of vehicle}}$2. Trip and garage expenses.3. Contract charges.4. Tyre wear cost can be calculated per Kilometer.5. Road toll tax	01
<p>b) Fixed charges</p> <ol style="list-style-type: none">1. Tax per trip.2. Insurance3. Administrative charges4. Wages of drivers and cleaners.5. Depreciation per trip.	01
<p>c) Additional charges</p> <ol style="list-style-type: none">1. Hamali charges2. Stationary charges	01
<p>Total operating cost = Operating charges + Fixed Charges + Additional charges</p> <p>Contact approved truck suppliers for the availability of truck and rate. Record their name and rates in register. Choose the truck supplier whose services are prompt and rates are economical.</p>	01
<p>c) Explain any four factors considered while buying used car.</p>	04
<p>Answer: Factors to be considered for buying a used car (<i>Consider any 8 points each point carry 1/2 mark</i>) –</p> <ol style="list-style-type: none">1) Tyres: the condition of tyres its life and nature of wear must be noted.2) Body: The condition of the body and paint must be checked.3) Battery: The condition of battery is also essential before valuation because its cost is also high.4) Rattling noise: Check noise level and its origin or source.5) Engine: Starting qualities, good pick up, low fuel combustion, power output must be checked on road test. Check also engine oil pressure. Exhaust smoke will also indicate the condition of cylinder and working parts.6) Running Condition: On the road test it is possible to know drive the mechanism such as clutch, gear box, universal joint, differential. The wear and tear can be seen on road test.7) Registration and Tax payment: The vehicle R.C. book must be checked. This will indicate the model and year of manufacture and number of owners; the tax paid to the insurance, expiry date can also be seen.8) Make and Model, Year: This can be seen from R.C. book but with experience it is possible to indicate the number of years of service of vehicle.9) Number of Owners: From R.C. book it is possible to know the number of owners and type of persons who owned.10) Popularity of the make depending upon the public opinion market rates of the vehicles goes up and down.	04



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<p>d) Explain the importance of vehicle navigation system.</p>	<p>04</p>
<p>Answer: Importance of vehicle navigation system are <i>(any 04 points, 01 mark each)</i></p> <ol style="list-style-type: none">1. To locate vehicle – A vehicle tracking system enables the fleet operator to find out the location of the vehicle throughout the journey of the vehicle, against time. Most transporters use GPS to locate their vehicle.2. Fleet Management - GPS vehicle tracking system also helps the fleet owners to see the vehicle's current data like its mileage, speed, engine capacity, direction of travel etc. for the fleet owners to manage their fleets and improve their business strategies3. Vehicle Security- Vehicle tracking system can be used to protect their vehicles from theft. The system shows the location of the vehicle and hence helps to recover your stolen vehicle. It is even possible to stop the vehicle's engine remotely4. Teens Safety - Vehicle Tracking System can also be used by the parents to ensure the safety of their teenagers driving the vehicle. System gives you the report of where the vehicle went, its speed, how long it stopped and etc5. School Buses - Vehicle Tracking System proves beneficial for schools to track the bus locations. This system will be helpful to keep an eye on the movement of school buses.6. Apart from utilizing the data generated by the vehicle tracking system for enforcing the schedule of the bus, this data also provides important inputs for decision making.7. The system facilitates computation of exact distance travelled in a given time span, computation of the speed of the bus at a given location, analysis of the time taken by the bus to cover certain distance.8. It becomes a very powerful tool in case the Transport Corporations are hiring private buses, as computation of the distance travelled, based on which payments are made becomes totally objective.	<p>04</p>
<p>e) What factors are considered in preparing accident survey report?</p>	<p>04</p>
<p>Answer: factors are considered in preparing accident survey report as below- <i>(Any 8 points- each point carry 1/2 Mark)</i></p> <ol style="list-style-type: none">1) General: Site, date and time of accident2) Registration no. of vehicle involved in accident.3) Nature of Accidents: collision with or avoidance of overturning, other kind of accident other than overturning.4) Primary Cause of accident: fault of driver or pedestrian, defective road surface, other cause, cause not know.5) Light conditions: Daylight, dusk, dark with good street light, dark with no street light.6) Road condition: Straight, bend, intersection, flat, dry, wet, hill, concrete, earth road.7) Traffic condition: Dense traffic, light traffic, moderate traffic, controlled junction, uncontrolled junction.8) Responsibility of driver: Sex, age, driving experience, intoxicated, asleep or inattentive, speeding.9) Responsibility of Pedestrian: Age, deaf, blind or otherwise walking on road, crossing or	<p>04</p>



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<p>running into road, intoxicated, confused by traffic, talking in roadways.</p> <p>10) Particulars of motor vehicle: Age of vehicle, overload, defective brakes, defective steering, puncture or burst, other serious mechanical defects.</p> <p>11) Causalities persons killed/ injured: Rider of motorcycle, passengers other than driver or rider, cyclist, pedestrian, not known.</p> <p>12) Were the motor vehicle involved in an accident is covered by insurance to the extent required by the MVA.</p> <p>13) Result of investigation and court proceedings.</p>	
<p>f) What infrastructural are to be provided in a depot.</p>	04
<p>Answer: Following infrastructural facilities are to be provided in a depot (<i>Any 8 points- each point carry ½ Mark</i>)</p> <ol style="list-style-type: none">1. Internal parking and External parking Regularly in-service buses stored in the interior of the garage, with less used or older service vehicles, and vehicles awaiting disposal are stored externally2. Fueling point3. Fuel storage tanks4. Engineering section - Smaller depot garages may contain the minimum engineering facilities, limited to light servicing facilities5. Inspection pits6. Bus washing bay7. Brake test lane8. Staff canteen/rest room9. Several bus depots are supplemented by a central works facility10. Garages may also contain recovery vehicles to recover break-downs vehicles11. Over head tank for adequate water supply12. Adequate Electricity facility13. Central Store	04
<p>6 Attempt any FOUR of the following</p>	16
<p>a) What factors are to be considered while buying a new motor vehicle.</p>	04
<p>Answer: Choosing a car is an important decision that merits carefully planning. Cars come in all sorts of sizes, configurations, shapes and prices so you have to draw a checklist as follows-</p> <p>i) Checkout the features and quality of new vehicle –</p> <ul style="list-style-type: none">• Checkout the features offered and additional optional fittings, which suits your lifestyle.• Checkout the quality factors of new vehicle like mileage, fuel storage capacity, option of using alternative fuels like CNG/LPG, also safety features like airbags, antilock braking system etc <p>j) Ex-showroom price and on road price-</p> <ul style="list-style-type: none">• There is huge difference between on-road price and ex-showroom price.• Ex-showroom price is the basic price which does not include Insurance, RTO registration charges, extended warranty if any and sometimes the Municipality Road tax etc. After adding all these you will get on road price. <p>k) Use of vehicle</p> <ul style="list-style-type: none">• Select the vehicle on basis of for what purpose you are buying a new vehicle (Personal use,	04



<p>Commercial use, expected seating capacity etc.)</p> <p>l) Inspecting the vehicle</p> <ul style="list-style-type: none">• Before purchasing the vehicle inspect the vehicle for whether the features are as per your demands or not. <p>m) Gather expert reviews –</p> <ul style="list-style-type: none">• Read expert comments and reviews on the vehicle, you are buying.• Do the comparative study with other same class of vehicles to checkout for added benefits.• Enquire about extended warranty as well as regular service contract. <p>n) Test drive the vehicle –</p> <ul style="list-style-type: none">• Analyze and be sure that the vehicle has characteristics that you are looking for.• Inspect and feel carefully all the interior and exterior such as bonnet, of vehicle.• Checkout your vehicle thoroughly including braking, electrical, steering system etc before driving at home. <p>o) When and where to buy</p> <ul style="list-style-type: none">• Vehicles prices hike up and down often, Ex- Showroom price & tax applicable can also varied as per location hence it's important to decide when and where to buy a vehicle. <p>p) Closing the deal –</p> <ul style="list-style-type: none">• Vehicles prices hike up and down often, so negotiate the price of the vehicle. Remember the Actual price of the car may be far less than the Advertised price so bargain as much as possible.	
<p>b) Write the role of Automobile engineer in Transport organization</p>	<p>04</p>
<p>Answer: An Automobile Engineer is the real technocrat in automobile as well as transport industry, so he is required to play an important role as a responsible person as follows-</p> <p><i>(Any four points, each carry 1 mark)</i></p> <ol style="list-style-type: none">1. Automobile engineers as an authority have to perform different functions in the office of STA/RTA as licensing authority, registration authority, Taxation authority etc.2. In transport organizations, planning and scheduling various transport operations - Route Survey and trip planning, Scheduling of buses and Crews,3. To maintain different records and its analysis.4. Traffic analysis and control.5. To adopt new technology and to introduce various improvement programs in new generation vehicle.6. To try for different means of fuel economy.7. To try to make vehicle more attractive, more comfortable and more reliable.8. He is required to carry out the research and impart drivers training and road safety aspects.	<p>04</p>
<p>c) Explain the role of ARAI in Automobile industry.</p>	<p>04</p>
<p>Answer: Automotive research Association Of India:-</p> <ol style="list-style-type: none">1. ARAI is co-operative industrial research association by the automotive industry with the Ministry of Industries, Government of India. The ARAI is located in the western part of Pune, Maharashtra established in 1986.2. The Role of the Association are to provide research & development in automotive engineering for industry, Product design and development, Evaluation of automotive equipment, Testing, Certification and Calibration services to the industry for developing safe, reliable and eco-friendly & user-friendly vehicles / components / products, Carry out	<p>04</p>



<p>test and calibration in accordance with stated methods and customer's requirements and to Harmonize Indian automotive standards to global standards</p> <p>3. In order to meet the development requirements of Industry, several facility and competence build-up projects are completed. These are Engine Design/Simulation Software Installation, Development of bi-fuel CNG kits, new techniques and software capabilities in Noise, Vibration, Harshness Analysis, Vehicle Crash Analysis, VDACS software for chassis dynamometer control, Particulate Measurement System and Digitally Controlled Load Simulation.</p> <p>4. ARAI is only automotive engineering R&D institute in India to be awarded ISO 9001 Quality System Certification.</p> <p>5. ARAI is the first Indian institute to develop HCNG (Hydrogen blended CNG) fuel engine complying with EURO V standards for light commercial vehicles. (HCNG is greener than CNG and perceived as the ultimate alternative for fossil fuels. The engine has been developed for Tata Motors)</p>	
<p>d) What are the documents required to produce at the time of registration of new vehicle.</p> <p>Answer: Documents required to produce at the time of registration of new vehicle.</p> <p>a) An application for registration of a motor vehicle in Form 20.</p> <p>b) Sale certificate in Form 21 given by dealer;</p> <p>c) valid insurance certificate;</p> <p>d) proof of address - any one document</p> <p>e) Registration fees.</p> <p>f) original sale certificate from the concerned authorities in Form 21 in the case of ex-army vehicles;</p> <p>g) design approval from the Transport Commissioner in the case of a trailer or a semi-trailer</p> <p>h) road-worthiness certificate in Form 22 from the manufacturers, Form 22-A from the body builders;</p> <p>i) customs clearance certificate in the case of imported vehicles along with the license and bond, if any;</p> <p>j) temporary registration, if any;</p> <p>k) 7/12 abstract in case of agricultural tractor & trailer for Tax exemption.</p> <p>l) Entry tax payment proof if any vehicle, body or tanker is purchased from outside the state.</p> <p>m) Octroi receipt if registering in municipal limits.</p> <p><i>Note- Document a to e are compulsory for every vehicle. Should be given weightage of 04 marks</i></p>	<p>04</p> <p>04</p>
<p>e) Write any four objectives of taxation.</p> <p>Answer: Objectives of taxation (Any 4 –each point carry 1 Mark)</p> <p>1. Raising the revenue of government.</p> <p>2. Economical growth of state and nation.</p> <p>3. Reduction in unemployment.</p> <p>4. Reduction in regional disparities.</p> <p>5. Distributional justice to all the people.</p>	<p>04</p>



f) What are the factors considered for valuation of vehicle?	04
<p>Answer:</p> <p>The process of determining the current worth (<i>value</i>) of a vehicle is called as valuation. There are many techniques that can be used to determine value, such as subjective and objective.</p> <p>Following are the factors considered for valuation of vehicle -</p> <ol style="list-style-type: none">1. Know the current market value of vehicle2. Calculate the depreciation of vehicle based on market value. for this consider –<ol style="list-style-type: none">i) Make, Model and Variant E.g. Make – Maruti-Suzuki, Model - Swift Variant - VDiii) Month and Year of Manufacture e.g. June 2012iii) The city in which the car was registered.3. Calculate the depreciation of vehicle based on usage and aging.4. Analyze the mechanical condition and damage occurred with respect to Body, Chassis, and Aesthetics, Engine condition, vibrations, noise etc.5. Consider the Tyre condition and decide tyre cost.6. Kilometers driven – this can be find out from the odometer on the dashboard.	04