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- 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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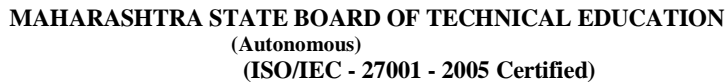
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<p>1. One Time Tax on Non- Transport Vehicles -</p> <p>On motorcycle, cars, mopeds, jeeps etc. registered in non-transport category, onetime tax (OTT) is levied and collected on Vehicle cost. A cost of vehicle in relation to vehicle manufactured in India means cost as per purchase invoice of the vehicle issued either by the manufacturer or the dealer of the vehicle and it includes the basis-</p> <p>(Cost of vehicle = manufacturing cost of vehicle + Central Excise + Sales Tax)</p> <p>2. OTT – Taxes on Transport vehicles</p> <p>Payment of OTT for LMV (Transport) is mandatory for the new vehicles registered after May 2000. But for old vehicles registered prior to May 2000, it is an optional. They can either adopt yearly method or OTT. While accessing the OTT for old LMV's their present annual rate of tax and the age of vehicle is considered and the OTT is fixed where as in the case of new LMV's 7 times the annual prevailing rate of tax is levied and collected.</p>	3
<p>c) State the necessity of permit. List the various types of permit.</p>	4
<p>Answer: Necessity for permit</p> <p>1) No owner of a motor vehicle shall use or permit the use of the vehicle as a transport vehicle in any public place, whether or not such vehicle is actually carrying any passengers or goods save in accordance with the conditions of a permit granted or countersigned by a Regional or State Transport Authority authorizing him the use of the vehicle in that place in the manner in which the vehicle is being used.</p> <p>2) If it is proposed to use the vehicle or vehicles in two or more region lying within the same state, the application shall be made to the Regional Transport Authority of the region in which the major portion of the proposed route or area lies.</p> <p>3) Government generates revenue by granting new permits.</p> <p>Types of Permits. (Any four type – 1/2 mark each)</p> <p>i) Stage carriage permit ii) Contract carriage permit iii) Private service vehicle permit iv) Goods carriage permit v) Tourist permit vi) National permit</p>	2
<p>d) Mention the duties of conductor of state transport organization.</p>	4
<p>Answer: Duties of conductor of state transport organization (Any eight points – 1/2 mark each)</p> <p>1. To issue tickets and collect correct amount of fare from passengers. 2. Help the disabled person for getting in and exit from bus. 3. Check the concessional fare documents. 4. He should confirm that every passenger has taken ticket. 5. He should not unduly delay on the journey. 6. In case of mechanical breakdown and due to other causes beyond his control, he should arrange to convey the passengers to their destinations in some other vehicles. 7. He should follow the rules and regulations as specified by MV Act. 8. In case of accident he should provide first aid to persons. 9. At any place where hamal (Collie) is not present he should help the passengers to carry the luggage inside the vehicle. 10. In the event of breakdown or accident he should assist the driver.</p>	4



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e) Write down four functions of STA.	4
<p>Answer: Functions of STA (<i>Any four</i>)</p> <ol style="list-style-type: none"> To give effect to the directions issued by the state government under section 67 to control road transport throughout the state. To co-ordinate and regulate the activities and polices of the Regional Transport Authorities. To settle all disputes and decide the matters where RTAs have difference of opinion. To conduct not less than two meeting in a year. To perform the duties of a RTA where there is no such authority and, if it thinks fit or if so required by a RTA, to perform those duties in respect of any route common to two or more regions. To discharge such other functions as may be prescribed. 	4
f) Which vehicles are exempted from tax payment and Why?	4
<p>Answer: Vehicles exempted from Tax Payment: (<i>Any Six - each point carry 1/2 Mark</i>)</p> <ol style="list-style-type: none"> Vehicles belong to state government, local self government, Municipal Corporation etc. Ambulance working on no loss no profit basis. Invalid carriage. Vehicles solely used for transportation of school children and owned by school or private person. Vehicles belong to Orchestra, Tamasha Mandal, Drama Theatre, etc. Vehicles under non use. Tractors and tralions used for agriculture purpose. <p>Vehicles are exempted from tax payment because these vehicles work / used for state Government, Central Government, Municipal Corporation. The vehicle which work for social, cultural, educational, agricultural activities, so they are exempted from BMV tax.</p>	3
g) Why fitness of driver is necessary?	4
<p>Answer: Necessity of driver's fitness (<i>Any suitable four points</i>)-</p> <p>Driver is a steering man who drives the vehicle. Fitness of driver is related to control of motor vehicle during running; hence it is necessary-</p> <ol style="list-style-type: none"> For safe journey of passengers and goods. To save the lives of passengers, pedestrians, other road users, To avoid damage to other vehicle. To avoid the accidents, injury/ death of human being, animals etc. 	4
2. Attempt any FOUR of the following :	16
a) Describe the procedure for obtaining learners license.	4
<p>Answer: Procedure for obtaining learners license-</p> <p>To obtain learner's licence-</p> <ol style="list-style-type: none"> The person who has completed age of 18 years (16 years for Motorcycle without gear and 20 years for transport vehicles) can apply in Form 2 along with required documents. <p>Following Documents required for getting Learner's driving license.</p> <ol style="list-style-type: none"> Application cum declaration of physical fitness in FORM 1. Medical certificate issued by Registered Medical Practitioner in prescribed form No.1-A. Age and address proof by any one of the following document attested by a competent authority- Ration card/Electoral Roll or Voting ID Card/Life Insurance Policy/Passport/Electricity bill or telephone bill/Pay slip/School leaving certificate etc. Receipt of appropriate fees paid. Three copies of recent photograph (size 5 cm X 6cm) 	2





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2. Every applicant for learners licence shall present himself before the licensing authority on such date place and time as the licensing authority may appoint for a test and satisfy such authority that the applicant possesses adequate knowledge and understanding of the traffic signs, traffic signals and the rules of the road regulation, The duties of driver etc.	1
3. After the fulfillment of all the above requirements the learner's licence shall be issued to the applicant in Form No - 3 for the period of six months.	1
b) Draw signs (i) No entry (ii) compulsory turn left	4
Answer: (Each sign carry two marks) i) No entry  ii) Compulsory turn left 	4
c) State the function of CIRT.	4
Answer: The main Functions of CIRT are – (Any four functions - 1 mark each) 1. To promote and provide for the study of the principles and practices of organization and management in various spheres of public transport. 2. To conduct research on critical issues in transport development and to undertake consultancy assignments to improve organizational effectiveness and operational efficiency. 3. To impart training and education to all categories of managers and professionals engaged in furthering the cause of public transport. 4. To help the government and its agencies in evolving integrating policies and legislative framework to enable a balanced growth of the transport sector. 5. To be the clearing house of ideas, information and data pertaining to transport industry with specific reference to satisfy, environment and productivity. 6. To lay down standards, specifications and norms for various materials used in heavy vehicles through performance evaluation, material analysis and quality monitoring. 7. To undertake research for improvement and technological up gradation of vehicles used for passenger transportation together with their components and assemblies.	4
d) What is the role of surveyor?	4
Answer: Role of surveyor (Any four points – each carry 1 mark) 1) Maintaining confidentially and neutrally without jeopardizing the liability of the insurer and claim of the insured. 2) Conducting inspection and re-inspection of the property in question suffering a loss. 3) Examining, inquiring, investigating, verifying and checking upon the causes and the circumstance of the loss in question including extent of loss, nature of ownership and insurable interest. 4) Conducting spot and final surveys, as and when necessary and comment upon franchise, excess/under insurance and any other related matter. 5) Estimating, measuring and determining the quantum and description of the subject under loss. 6) Advising the insurer and the insured about loss minimization, loss control, security and safety measures wherever appropriate, to avoid further losses.	4





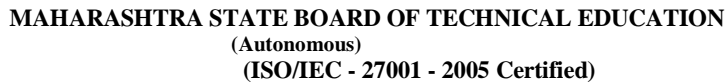
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<p>7) Commenting on the admissibility of the loss as also observance of warranty conditions under the policy contract.</p> <p>8) Surveying and assessing the loss on behalf of insurer or insured.</p> <p>9) Assessing liability under the contract of insurance.</p> <p>10) Pointing out discrepancy, if any in the policy wordings.</p> <p>11) Satisfying queries of the insured and of persons connected there to in respect of the claim/loss.</p> <p>12) Recommending applicability of depreciation and the percentage and quantum of depreciation.</p>	
<p>e) Sketch the following traffic signs (i) Stop (ii) Cross road</p>	<p>4</p>
<p>Answer: (Each sign carry two marks)</p> <div data-bbox="368 653 467 693">i) Stop</div> <div data-bbox="402 735 552 926"></div> <div data-bbox="946 653 1153 690">ii) Cross road</div> <div data-bbox="984 726 1167 936"></div>	<p>4</p>
<p>f) Write in brief the development of Automobile industry in India.</p>	<p>04</p>
<p>Answer: Development of Automobile industry in India.</p> <p>Until the 1930s, cars were imported directly in India, but in very small numbers. The first car ran on India's roads in 1897.</p> <p>An embryonic automotive industry emerged in India in the 1940s. Hindustan was launched in 1942, long time competitor Premier in 1944. They built General Motors and Fiat products respectively. Mahindra & Mahindra was established by two brothers in 1945, and began assembly of Jeep CJ-3A utility vehicles. Following the independence, in 1947, the Government of India and the private sector launched efforts to create an automotive component manufacturing industry to supply to the automobile industry. In 1953 an import substitution program was launched, and the import of fully built-up cars began to be impeded.</p> <p>However, the growth was relatively slow in the 1950s and 1960s due to nationalisation and the license raj which hampered the Indian private sector. Total restrictions for import of vehicles were set and after 1970 the automotive industry started to grow, but the growth was mainly driven by tractors, commercial vehicles and scooters. Cars were still a major luxury item. In the 1970s price controls were finally lifted, inserting a competitive element into the automobile market. By the 1980s, the automobile market was still dominated by Hindustan and Premier, who sold superannuated products in fairly limited numbers. During the eighties, a few competitors began to arrive on the scene.</p> <p>To promote the auto industry the government started the Delhi Auto Expo which was had its debut showcasing in 1986. The Auto Expo of 1986 was a window for technology transfers showing how the Indian Automotive Industry was absorbing new technologies and promoting indigenous research and development for adapting these technologies for the rugged Indian conditions.</p>	<p>4</p>



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Eventually multinational automakers, such as Suzuki and Toyota of Japan and Hyundai of South Korea, were allowed to invest in the Indian market. Maruti Suzuki was the first, and the most successful of these new entries. As India began to liberalize their automobile market in 1991, a number of foreign firms also initiated joint ventures with existing Indian companies. The variety of options available to the consumer began to multiply in the nineties. By 2000, there were 12 large automotive companies in the Indian market, most of them off shoots of global companies.	
3. Attempt any FOUR of the following :	16
a) Explain in brief how a new vehicle is registered.	4
Answer: Procedure for a registration of a vehicle: 1) To obtain the registration certificate for motor vehicle, the applicant is required to apply in Form- 20 to registering authority within 7 days from the date of purchase of vehicle. The owner of vehicle is required to fill up all the information and submit the same to the authority in whose region the applicant resides. 2) The application must be accompanied with following documents – (<i>Note: Essential documents for a particular class should be mentioned</i>) a) Sale certificate in Form No. 21 given by dealer. b) Roadworthiness certificate in Form No.22, 22 – A form the manufacturer. c) Roadworthiness certificate in Form No. 22 - A Part II from the body builder for transport vehicles. d) Purchase invoice (for vehicle attracting life time tax). e) Temporary registration if any. f) Valid insurance certificate. g) Address proof. h) Entry tax payment proof if any vehicle, body or tanker is purchased from outside the state. i) Octroi receipt if registering in municipal limits. j) PAN number or Form No. 60 in two copies (except 2 wheeler). k) Manufactures certificate for invalid carriage. l) Customs clearance certificate in case of imported vehicles along with licence and bond if any. m) Bill of entry for imported vehicle. n) Design approval from transport commissioner in the case of trailer. o) 7/12 abstract or Tahasildar certificate in the case of agricultural tractor and trailer. p) Appropriate fees q) Fitness certificate of Vehicles(Form No.38) 3. After fulfillment of the above requirement the owner of vehicle is required to produce the vehicle before the registering authority for inspection or for verification. The registering authority verifies the entries made in Form 20 with actual particulars of the vehicle. Once the registration formalities are over, a registration number is allotted to the vehicle and registration certificate/smart card is issued to the owner.	<div style="text-align: center;">1</div> <div style="text-align: center;">2</div> <div style="text-align: center;">1</div>
b) State the objectives of taxation.	4
Answer: Objectives of taxation (<i>Any 4 –each point carry 1 Mark</i>) 1. Raising the revenue of government. 2. Economical growth of state and nation. 3. Reduction in unemployment. 4. Reduction in regional disparities. 5. Distributional justice to all the people.	4



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c) Draw a format required for log book.

4

Answer: (Note: Credit may given to any other suitable format)

Log Book:

Truck No:				
Driver Name:				
Station	Date	Start Time	Stop Time	Running Time
Distance covered				
Total Time		Rest Time		
Ideal Time				
Drivers Signature				

4

d) Describe the procedure of survey and valuation of vehicle

4

Answer:

Procedure of Survey:

It is mandatory for a person intending to act as a surveyor to obtain a license from the controller of insurance, ministry of finance, Govt. of India.

1) Whenever an accident occurs all particulars have to be collected and ascertained as given below-

- General: Site, date and time of accident
- Registration no. of vehicle involved in accident
- Nature of Accidents
- Primary Cause of accident
- Light condition
- Road and traffic condition
- Responsibility of driver
- Responsibility of Pedestrian
- Particulars of motor vehicle

2) Assess the quantum of loss.

3) Determine the liability of the insurers within the framework of policy conditions.

4) Negotiate with the insurer/advise the insurers regarding the disposal of salvage.

5) Prepare the detail survey report and submit it to the insurer.

02

Procedure of Valuation: The process of determining the current worth of a vehicle is called as valuation.

1) Know the current market value of vehicle

2) Calculate the depreciation of vehicle based on market value. for this consider –

- Make, Model and Variant e.g. Maruti Swift VDi
- Month and Year of Manufacture e.g. July 2009
- 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 (you can find this on the odometer on the dashboard)

Considering all above factors the valuation of used car is done.

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e) Write how will you sell a used car and state the documents required.	4
<p>Answer:</p> <p>Preparation for selling a used car.</p> <ol style="list-style-type: none">1) Make car presentable: Use of vaccum for interior cleaning, wash and apply wax for extroir cleaning.2) Replace the broken items like lense, headlights, windshield etc.3) Service the car from authorized dealer.4) If abnormal sound is coming during running of car, rectify it.5) Repair dents followed by painting.6) Tyres should have some tread life on them otherwise replace the tyre to avoid deduction.7) Keep service records complete and arranged neatly.8) We can sell the used car to private party or trade it in to a delaer. <p>Documents required:</p> <ol style="list-style-type: none">1) Certificate of registration.2) Certificate of taxation.3) Insurance certificate.4) P.U.C. certificate.5) Entry tax NOC. (for outside state vehicle)	2
f) Write the importance of an Automobile engineer.	4
<p>Answer: Importance of an Automobile engineer-</p> <p>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>(Any four points, each carry 1 mark)</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>Note: Any other relevant points may be considered.</p>	4
4 Attempt any FOUR of the following :	12
a) How the ownership is transferred on sale of a vehicle? Explain in brief.	4
<p>Answer: Transfer of ownership on sale of vehicle -</p> <ol style="list-style-type: none">1) Within 14 days from the date of sale, the seller has to submit the intimation of sale of the vehicle to the registering authority whereas in whose region the purchaser resides. This intimation of sale shall be made in Form 29 and one duplicate copy of the same shall be sent or should be handover to the purchaser at the same time.2) Within 45 days from the date of sale of vehicle, he should obtain NOC from original registering authority and submit the same to the registering authority to whom he has submitted the Form 29 and Form 30. If the NOC is not received within 45 days then he should submit the acknowledgement or receipt of the post that he has applied for NOC but yet NOC has been not received from the authority.3) The purchaser should submit the declaration of purchase of vehicle in the Form 30 to the registration authority in whose region he resides within 30 days from the date of purchase of the vehicle. Form 30 should	4



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be accompanied by the registration certificate, insurance certificate, appropriate fees, taxation certificate etc. 4) After fulfilling above requirements the registering authority may verify the documents and transfer the ownership in the name of purchaser.	
b) List down the various test tracks available at VRDE	4
Answer: Test tracks available at VRDE (Any Eight) 1. High Speed track 2. Belgian pave track 3. Corrugated tracks 4. Long wave pitching track 5. Pot hole track 6. Sand patch track 7. Steering pad 8. Dust tunnel 9. Serpentine courses 10. Gradient track 11. Shallow water trough 12. Deep wading trough 13. Cross country track 14. Step climbing facility 15. Ditch crossing facility. 16. Mud Track	4
c) State any four factors to be considered in crew scheduling.	4
Answer: Factors to be considered in crew scheduling – (Any Four) 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. 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.	4
d) What documents and eligibility are required for conductor license?	4
Answer: Documents required for conductors Licence: 1. An application for conductor licence is to be made in the Form L.Con A 2. Medical certificate issued by RMP 3. Three copies of recent passport size Photograph. 4. SSC passing Certificate. 5. School Leaving certificate 6. Address Proof and photo identity card.	02



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Eligibility : 1. He should have completed 18 years of age and qualified 10 th standard. 2. He should be physically fit to carry out his duties. 3. He should know the conductor's duties and documents to be carried in a stage carriage 4. He should have knowledge of regional language & first aid.	02
d) Write the importance of warranty system.	4
Answer: Importance of warranty system: 1) In warranty system Defective parts are replaced. 2) In warranty system the defective parts are repaired in stipulated time. 3) The cost is not charged from the customer. 4) These expenses of repairs are born by the manufacturer. 5) Sometimes with the understanding of parent company the warranty claims are offered to their customers even after expiry of warranty period.	4
e) Discuss the instructions which are useful in driving of a motor vehicle.	4
Answer: Instructions necessary for driving of motor vehicle (Note: credit should be given to any 4 proper driving instruction, each point carry 1 mark) For driving motor vehicle always keep attention on the activities happening around the vehicles and react accordingly. Some general instructions in driving of motor vehicle are as follow. 1. Look at the floorboard; you'll see three pedals. From left to right, they are: clutch, brake, and accelerator. Study the simple diagram on the top of the gearshift, which will show you where the gears are. Make sure the parking brake is engaged and the car is on a flat surface in an area where you have plenty of room. Press down on the clutch pedal and then move the gearshift into the neutral position. 2. Start the car. Keeping the clutch pedal down, put the car into first gear by moving the gearshift to the top-left position. Apply the foot brake and release the parking brake. Release the foot brake when you're ready to start moving. Begin to release the clutch pedal slowly; when you hear or feel the engine begin to slow down, slowly press down on the gas pedal as you continue to release the clutch. The car will start to move forward. Accelerate until the car has reached about 3,000 rpm, then take your foot off the accelerator, press down on the clutch pedal, and pull the gearshift directly down through neutral to second gear. Be sure to pull the gearshift down until it can't go any farther. Release the clutch pedal gently, simultaneously pressing down gently on the accelerator pedal. Repeat the shifting process each time you hit 3,000 rpm until you're driving at the appropriate speed. 3. Downshift by releasing the accelerator pedal when you want to decrease your speed. Press down on the clutch and move the gearshift through neutral into the next-lower gear (move down only one gear at a time). Once you're in the lower gear, release the clutch slowly and brake as you do so. Stop the car by downshifting to second gear and applying the brakes. Apply the clutch just before the car stops. Don't downshift into first. 4. Drive in reverse by following the same steps you would for starting in first gear. The reverse gear engages more quickly than first gear, however, so be sure to release the clutch slowly and begin to press the accelerator pedal as soon as the car begins to move. 5. Adjust rear view, side view mirrors. Drive with both hands on steering wheel. Speed of the vehicle should be adjusted as per traffic conditions and match the flow of traffic. Drive with constant speed as far as possible. Scan the surrounding area of vehicle to know what is ahead, behind and beside you.	4



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6. Avoid sudden action like- braking, turning, and overtaking. Never overtake or stop at a blind spot on the road. Reduce the speed of vehicle before the curve. Change the lanes using proper signals with care. While overtaking give proper signal i.e. blow of horn or flashing of lights. Always park off the road.	
5 .Attempt any FOUR of the following :	16
a) How BEST works? Explain in brief.	4
Answer: Working of BEST (Bombay Electric Supply and Transport) 1) Organization setup: The Transport Division is headed by Assistant General Manager (Transport), and he is assisted by Chief Manager (Traffic). BEST's entire operation is divided into 25 depots, and all these depots are placed in zones. The Dy. Chief Managers (Traffic) are zonal in-charge, who are assisting the Chief Manager (Traffic). The Depot Managers are heading each Depot. Traffic Superintendents/ Asst Traffic Superintendents, Sr. Traffic Officers, Traffic Officers, Assistant Traffic Officers and Sr. Asst. /Office Asst. assist the Depot Managers. This team of officers directly controls the operational and administrative activities of the respective Depot. Apart from this team, the supervisory category viz. Bus Inspectors, for plugging the leakage in revenue, Starters for controlling the bus operation etc., are appointed at depots. Each depot is provided with a wireless vehicle, which is used to monitor the operation of buses in the jurisdiction of the depot. 2) Traffic Control Room: It works round the clock. The section is provided with VHF sets connecting all the depots as also the Police Control, Traffic Police Control, and Railways etc. This officer regulates the entire operation smoothly with the help of the Divisional Officers, by being in touch with them through wireless sets. 3) Bus Control Room: It functions round the clock, to attend to the vehicle breakdowns on field. The total operational area is divided into zones. Emergency breakdown vans are provided for each zone. These vehicles are provided with necessary spares/units so as to carry out emergency repairs on the field itself. For speedy communication these vehicles are equipped with VHF sets. 4) Traffic Training Center: The BEST has established a Training Center, to provide training and refresher courses to the operating crew members. On line training to new bus drivers is also provided with the help of training vehicles. At the depots Accident Prevention Training Vehicle counseling the operating staff about safe driving habits. 5) Ticket & Cash department: The Ticket and Cash Department collects the daily revenue earned at the depots. The same is counted, consolidated, and remitted in the banks. Inventory of ticket blocks to be issued to the conductors, is also maintained by the Ticket & Cash Department. 6) Accident & Claims Section: The Accident and Claims Section, as the name suggests, is established for settling the claims of personal injury / death due to accident involving our buses. Also various programs on Road Safety / Passenger Safety, to create awareness amongst the operating staff, passengers, pedestrians, and school children, are organized by this section in co-ordination with Training Center. 7) Traffic Planning Section: The Planning Section is established to prepare the schedules for different routes. The schedules are revised after every four months. Uneconomic routes are discontinued and the financial viability of the routes is appraised both at depot level as also at the Head Quarter level.	4



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c) Traffic and transportation planning in mega and medium cities. d) Management of roads in different terrains. e) Utilization of industrial waste in road construction. f) To improve environment pollution. g) Road traffic safety analysis and design. h) Bridge design and evaluation, bridge materials and construction techniques, instrumentation for bridges and highways.	
d) State the basic factors in bus scheduling.	4
<p>Answer: Basic factors in bus scheduling-</p> <p>1) Traffic demand: Assessing the volume or traffic demand is essential in bus scheduling. Traffic survey should reveal traffic movement sector wise density, centripetal and centrifugal flow, peak and lean periods, competition from other modes of transport. Road survey helps to judge the feasibility of road operation. Route length, route condition, traffic points running time, fixation of bus stop.</p> <p>2) Calculate time: Calculate the total time required completing the trip – It consists 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 be considered in this.</p> <p>3) Vehicle utilization: it is used to indicate the number of kilometers operated per vehicle per day.</p> <p>4) Requirement of buses: Calculate the number of buses required to be operated considering frequency of service for a maximum utilization of a bus.</p> $\text{No. of Vehicles} = \frac{\text{Running time(Twice)+ Stand Time (Twice)}}{\text{Frequency of Service}}$	4
e) Describe the working of MSRTC.	4
<p>Answer: Working of Maharashtra State Road Transport Corporation (MSRTC):</p> <p>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- This performs 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.</p> <p>ii) Divisional Workshop- This performs Reconditioning of starter motor, Brake units, Radiators, Work pertaining to minor accidents, Body repairs, Periodical road worthiness inspection, RTO approval of reconditioned buses etc.</p> <p>iii) Depot: This performs Washing, cleaning, oil change, minor servicing, replacement of all major and minor units and assemblies etc.</p>	4



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f) List any four automobile industries in India with their products.	4
<p>Answer: Automobile industries in India with their products. (Any four industries with their two products – 1mark each)</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 EX Turbo, SFC 407 Turbo Truck, LPT 709 E Turbo Container truck , LPT 407 Turbo Truck, SFC 709 E Aerial lift turbo Truck.• 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, Loadking, 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, i10 1.1 IRDE, i10 1.2L Kappa, Accent.</p>	4



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6. Attempt any FOUR of the following	16
a) Explain different types of vehicle insurance.	2
<p>Answer: Types of vehicle insurance:</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>1) Comprehensive insurance - It covers the risk of vehicle and its owner or driver as well as third party which involves in accident. Fire and theft cover is also provided against damage to the insured's vehicle. It does not include mechanical breakdown. The extent of comprehensive insurance may vary in detail from company to company. It is required to renew the policy annually, and it can be renewed two months in advance.</p> <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>	2 2
b) Describe the basic elements in transport management.	4
<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 and type of service required.</p> <p>Depending upon load to be carried, road conditions, working conditions, type of goods to be carried etc, the appropriate vehicle to be selected e.g. If a vehicle is to be selected of transporting large loads, the choice will be for high powered vehicles</p> <p>The selection of chassis length mainly depends upon the load to be carried and road conditions e.g. MSRTC has preferred the buses with short length of chassis to run in Konkan 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.</p> <p>3) Organization setup: Govt., Semi Govt., Private.</p> <p>4) Legal compliance: Documents required as per MVA, Registration.</p> <p>5) Policies of transport organization: Policies towards passengers and employees.</p> <p>i) Policies towards passenger:- Luxury service, Concession Pass for students and senior citizen, Express service on special route, Night service on special route, Vehicles for Special private Tours/Yatras/ functions/ Educational tours on public demand, Providing passenger amenities etc.</p> <p>ii) Policies toward employees – Bonus , Overtime allowance, Special duty Allowance, Provident fund, Health insurance, Co-operative Societies, Free travelling packages to employee and their family members, Training for Skill up gradation.</p>	4



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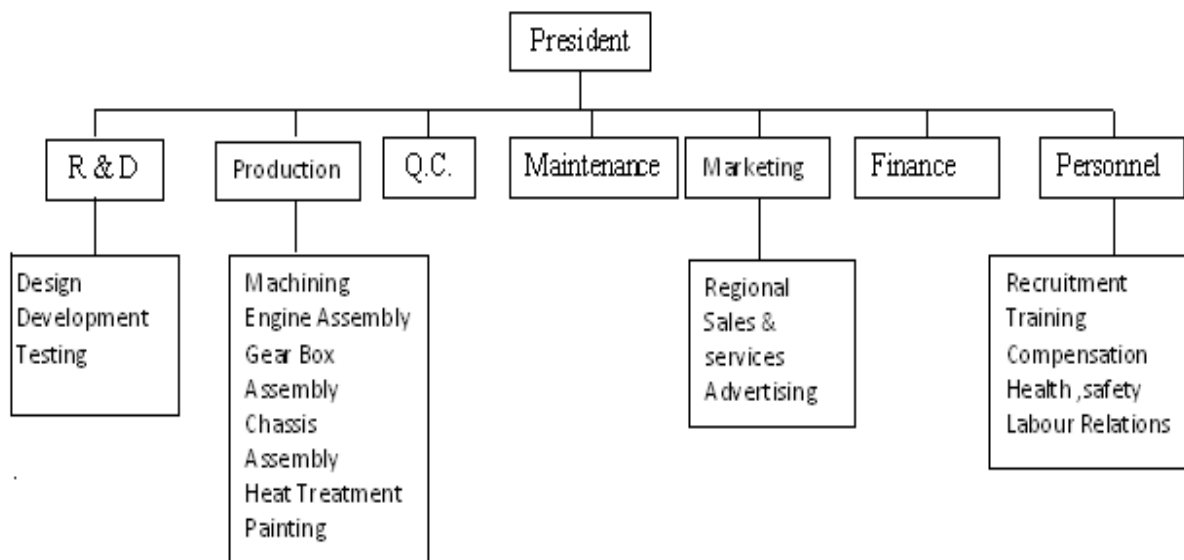
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c) Draw an organization structure of a private organization.

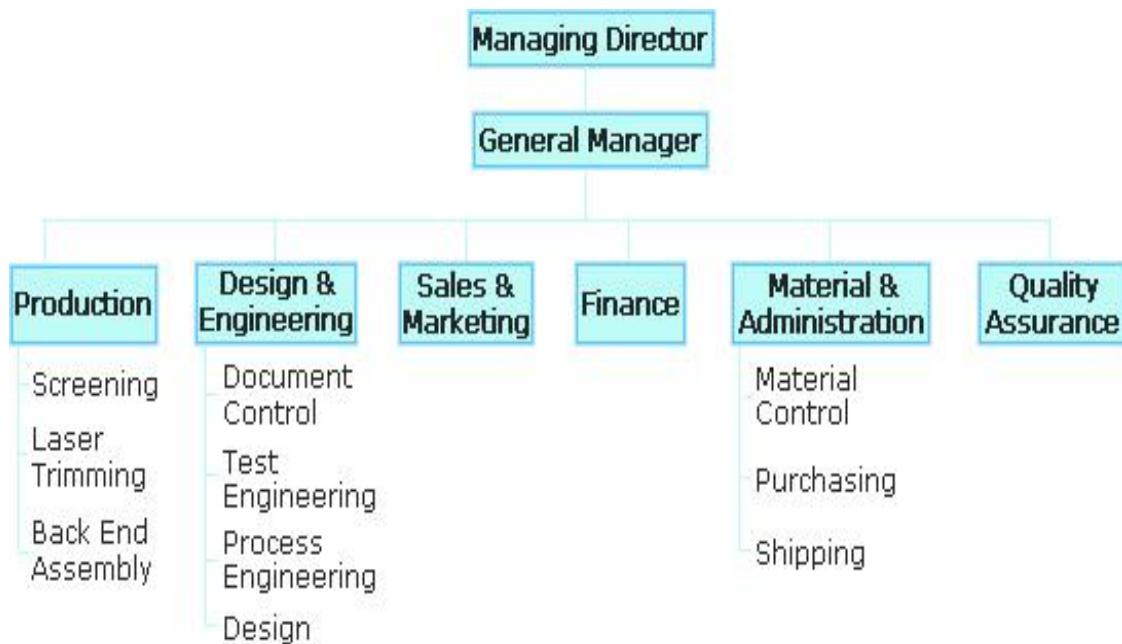
4

Answer: **Organization structure of a private organization:**



4

OR





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d) What is 'defensive driving'?	4
<p>Answer:</p> <p>Defensive driving means "driving to save lives, time, and money, in spite of the conditions around you and the actions of others. It is a form of training for motor vehicle drivers that goes beyond mastery of the rules of the road and the basic mechanics of driving. Its aim is to reduce the risk of collision by anticipating dangerous situations, despite adverse conditions or the mistakes of others. This can be achieved through adherence to a variety of general rules, as well as the practice of specific driving techniques.</p> <p>Defensive driving includes:</p> <ol style="list-style-type: none">1. Don't start the engine without securing each passenger in the car, including children and pets. Safety belts save thousands of lives each year.2. Leave space to escape dangerous situations.3. Slow down, especially during inclement weather conditions or at night.4. Always adhere to speed limits.5. Concentrate on your driving at all times and keep a watchful eye on pedestrians and pets along the roadside.6. Never drive if you are impaired by lack of sleep or being under the influence.7. Check your mirrors frequently.8. Follow the rules of the road. Don't contest the right of way or try to race another car. Be respectful of other motorists.	4
e) Enlist different causes of accident and their remedies.	4
<p>Answer:</p> <p>Causes of accident and their remedies:</p> <p>Large number of road accidents including fatal one are taking place in India every year and majority of road accidents occur due to driver's faults. (Any four causes with suitable remedies – 1 mark each)</p> <ol style="list-style-type: none">1) Carelessness – for example using a handheld mobile telephone while the vehicle is moving, driving through the red light, emerging from a side road into the path of another vehicle, listening loud music Remedy - Avoid all the driving distractions while driving.2) Lack of experience and licensing untrained drivers (that is those without the knowledge of road signs) – Remedy - As a golden rule, while driving look well ahead and all around carefully also follow all traffic signs and signals so that you are ready for any hazards that might occur.3) Aggressive driving habits like Overspeed, improper lane changing, improper overtaking etc- Remedy- Avoid the aggressive driving habits for safe drive, training to drivers, Awareness programs.4) Bad Weather conditions like bad lights, fogs, heavy rain etc. Remedy - It is necessary to use fog lamps or low beam headlights and operate efficiently other important devices like indicators, horn, wipers, parking light etc.5) Lack of sensitivity and responsibility - Driving under the influence of alcohol, intoxicated substances and under stress caused by economic or family problems. Remedy - Avoid consumption of alcohol while driving and be a responsible driver. Drivers training regarding traffic rules and regulations may avoid accident.	4



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f) State any four objectives of PCRA.	4
<p>Answer: Objectives of Petroleum Conservation Research Association (PCRA): <i>(Any four)</i></p> <ol style="list-style-type: none">1) To formulate strategies and promote measures for accelerating conservation of petroleum products.2) To create awareness among masses about the importance, benefits and methods of conserving petroleum products and clean environment by enhancing information and capacity building.3) To promote research, development and deployment efforts aimed at petroleum adoption and dissemination of fuel efficient technologies and substitution of petroleum products with alternate fields and renewable.4) To establish synergetic institutional linkages at the national and international levels in the areas of petroleum conservation and environment protection.5) To provide training and technical advisory services, designed to achieve economy and efficiency in use of petroleum products for cleaner environment.6) To function as a “Think Tank” to the Government of India for proposing policies and strategies on petroleum conservation and environment protection aimed at reducing excessive dependence on oil.	4