

**Marking Scheme  
CLASS-X (2018-19)**

**AUTOMOBILE TECHNOLOGY (404)**


**(Section A)**

Question No.	Answers	Marks
Q1	(i) Serviceability	[1/2]
	(ii) Working test procedure	[1/2]
Q2	C	[1]
Q3	D	[1]
Q4	B	[1]
Q5	B	[1]
Q6	B	[1]
Q7	C	[1]
Q8	D	[1]
Q9	Hybrid cars	[1]
Q10	Voltage, Current and resistance	[1]
Q11	Manufacturer	[1]
Q12	overheating	[1]

Question No.	Answers	Marks
Q13	The first 4 refers to the number of wheels, while the second number refers to the number of wheels which are given torque, or power. A 4x2 gives power to only two of the four wheels, either the front or back pair, depending on the axle.	[2]
Q14	i) Propeller shaft	[2]

	ii) Universal joints fitted with propeller shaft		
Q15	1. Conventional Chassis frame- For heavy / medium vehicles 2. Integral Chassis frame (mono coque) for cars 3. 'X' type Chassis frame for Jeeps.		
Q16	Tube Tyre	Tubeless Tyre	[2]
	1. It encloses a tube in which air is forced to high pressure.	There is no tube, the air under pressure filled in the tyre itself.	
	2. A non-return valve is fitted to the tube to fill air.	A non return valve is fitted to the rim, through with air is forced inside the tyre.	
	3. For repair of punctured tube the tube has to be removed from the tyre & rim.	Without removing tyre from the rim, the puncture can be repaired by rubber plug. But It can run few kilometres with punctured tyre.	
Q17	To keep your radiator system free of corrosion and performing well keeping your car engine cool.		[2]
Q18	1. Wear old clothes for this job. 2. Soap dries fast. Wash one side at a time to keep the soap from drying on your car's paint. 3. Wet and wring out your clothes before you dry, it will absorb water better. 4. Do not use detergent, dish soap. Detergent, dish soap is designed for dishes. Use car wash soap only.		[2]
Q19	Air filters keep the inside of the engine free of dust and insects. Replacing or cleaning air filter at the recommended interval to keep air flowing freely helps the car run well		[2]

Question No.	Answers	Marks
Q20	It is fitted in the ignition system of engine. It is just like a step up transformer. The function of ignition coil is to convert 12 volt dc to around 22000 volts dc (low tension current in to high tension current) and supply to the spark plugs.	[3]
Q21	The function of starting motor is to start the engine by drawing direct current (dc) from the battery. While cranking the engine with the help	[3]

	of the starting motor, it draws around 250 Amps of current from the battery for few seconds (4-5 sec.).	
Q22	<p>The automobile sales person is a very important person in the sale and marketing of a vehicle. It is expected that a set of duties will be performed by this person.</p> <ol style="list-style-type: none"> <li>1. Sells/leases and delivers a minimum number of vehicle per month (target given by shop owner).</li> <li>2. Approaches, greets and offers assistance or direction to any customer who enters the dealership.</li> <li>3. Assists customers in selecting a vehicle by asking questions and listening carefully to their responses.</li> <li>4. Explains fully the product performance, application and benefits.</li> </ol>	[3]
Q23	<p>The wrenches are hand tools for tightening and loosening of nuts and bolts. The function of this automotive tool is to hold slippery or small nuts and bolts and either loosen or tighten it.</p> <p>There are two types of wrenches –adjustable and nonadjustable.</p> <p>The single end wrench is non-adjustable type and of which fits into one size of nut, bolt or head. The adjustable wrench is of adjustable type to fit into various sizes of nuts and bolts. These are useful particularly for loosening and tightening of odd size nuts and bolts</p> 	
Q24	<p>Service manual gives the following knowledge to the vehicle owner</p> <ol style="list-style-type: none"> <li>1) Expanded view of assembly</li> <li>2) Disassembly sequence</li> <li>3) Tolerances, gaps, sizes of components</li> <li>4) Serviceability</li> <li>5) Life span of various components and its replacement schedule.</li> </ol>	[3]

	6) Decision for Repair or Replacement 7) Assembly procedure and 8) Working test procedure	
Q25	<p><b>The innovation:</b> Airbags have graduated from things that simply blast out of the dashboard to more advanced devices that protect you in a rollover, cushion your knee and adjust for smaller drivers. They can also determine the severity of the impact, your seat position and whether you're wearing a seat belt.</p> <p><b>What we did before:</b> Relied on seat belts, if we wore them, to protect us.</p> <p><b>Which cars have them:</b> All cars must have front airbags.</p>	[3]
Q26	When we get up in the morning and clean your face and body regularly, it makes us feel fresh. We use soap, shampoo, and detergent for cleaning. Similarly, a vehicle requires a cleaning operation. Cleaning of vehicles is very important. It makes the vehicle look better and gives comfort to the driver and passengers. We have to change the oil, lubricant and coolant of a vehicle whenever its quality is disturbed. We have to properly check all the important components of a vehicle.	[3]

**(Section B)**

Question No.	Answers	Marks
Q27	<p>Yes</p> <p>The technician/mechanic must use the service manual regularly to check the serviceability of component. This helps the technician to decide about replacement of component. The modern automobile requires attention to maintain its working while assembly. Reading helps in maintaining the tolerances, play for smooth working of components or assembly.</p> <p>Service manual should be kept in handy place for ready reference for the service work. Strict observation of the so specified item will enable one to obtain the full performance of the vehicle.</p> <p>The automobile today has many electrical, electronic gadgets which operate only at specialized voltages, amperage and resistance. The service manual gives range of voltage, amperage and resistance in variation of speed. This helps technician to take appropriate decision to solve the problem. The service manual also gives circuit diagram with colour code.</p>	[5]

Q28	<p>Some of common special tools are Universal holder, socket wrenches, flywheel puller, tappet cover wrench, Pierce plier, piston slide base, socket, front, fork oil seal driver, driver outer, ball race driver, tappet cover wrench.</p> <p><b>Universal clutch holding tool</b></p> <p>This universal clutch holding tool is tool for holding the compressor clutch when removing or installing the center nut.</p> <p><b>Torque wrench</b></p> <p>A torque wrench is a tool used to precisely apply a specific torque to a fastener such as a nut or bolt. It is usually in the form of a socket wrench with special internal mechanisms</p> <p><b>Tappet Wrench</b></p> <p>A wrench having parallel jaws at fixed separation (often on both ends of the handle).</p> <p><b>Flywheel puller</b></p> <p>A proper flywheel puller is the only correct and safe way to remove a flywheel from engine. Without using the recommended tool, there are chances of damaging the flywheel which could lead to a potential reliability issue.</p>	[5]
Q29	<p>i) <b>Tyre pressure monitoring systems:</b> Tyre pressure monitoring systems provide the latest and greatest technology for eliminating low tyre pressure on our cars, which can result in an accident or simply poor gas mileage. A tire pressure monitoring system can also alert us in seconds to a flat tyre, thereby reducing the chances of becoming involved in a car accident due to a flat tyre.</p> <p>ii) <b>Sensitive air bag systems:</b> In older model cars, the airbag deploys when a front-end crash occurs. However, many of today's vehicles come equipped with more sensitive air bag systems, which sense the difference in the size and weight of the occupants and deploys the air bags accordingly. This technology may even be able to detect that an individual is not wearing a seat belt or that he or she is positioned abnormally in the seat and compensate the air bag deployment to accommodate this.</p>	[5]
Q30	<p><b>1. Prepare your car</b></p> <p>The car should be on a level surface with the parking brake on and</p>	[5]

engine off, leaving the oil to cool for a few minutes.

## **2. Unscrew the oil cap**

Locate the oil cap (check with the manual to locate it) and unscrew it. This is very important, as a vacuum will not allow all the oil to drain out.

## **3. Locate the oil drain plug**

Get underneath the car and locate the oil drain plug. This is a lone bolt at the bottom of the oil sump.

## **4. Place the container**

Place a container big enough to hold the oil beneath the oil drain plug and unscrew the plug, being careful not to let it fall into the container.

## **5. Drain out the old oil**

Allow all the oil to drain out. This can take several minutes.

## **6. Locate the oil filter**

Locate the old oil filter with the help of your car's service manual. It should be identical to the one you are replacing it with.

## **7. Remove the old oil filter**

Turn the filter wrench anti-clockwise to loosen the oil filter. The filter may be full of oil so take care not to spill any.

## **8. Prepare the new filter**

Clean up the filter seat on the engine and place a light coating of oil on the gasket of the new filter.

## **9. Install the new filter**

Carefully screw the new filter into place by hand, making sure it is not overtight. Screw back in the oil drain plug and tighten it with the wrench.

## **10. Fill up with oil**

Using the funnel, carefully fill the engine oil, avoiding spillages. Measure the oil level with the dipstick after every two litres filled.

## **11. Check the level is correct**

When oil has reached the correct level, replace the oil cap. Turn on the engine for ten minutes and then off again. Check the oil level with

	<p>the dipstick once again - if the level is low, add more oil.</p> <p><b>12. Clean up</b></p> <p>Clean up all oil spillages on your engine and check for any leaks from the drain plug.</p> <p><b>13. Properly dispose of the old oil and filter</b></p> <p>Used oil is highly toxic and must never be disposed off with domestic waste. It's illegal to pour used oil into the sewage network. Put the used oil in a sealed container and label it. Then take it to an auto repair centre, service station or recycling centre. Most places will accept used oil for free.</p>	
Q31	<p>One of the most important aspects of customer service is that of what is often referred to as the</p> <p>Feel Good Factor. Basically the goal is to not only help the customers have a good experience,</p> <p>but to offer them an experience that exceeds their expectations. Several key points are listed as follows:</p> <p><b>1. Know your product :</b> Know what products/service you are offering. In other words, be an information expert. It is okay to say 'I don't know', but it should always be followed up by "but let me find out" or possibly "but my friend knows!" Whatever the situation may be, make sure that you don't leave your customer with an unanswered question</p> <p><b>2. Body Language/Communication:</b> Most of the communication that we relay to others is done through our body language. If we have a negative body language when we interact with others it can show our lack of care. Two of the most important aspects of positive body language are smiling and eye contact. Make sure to look your customers in the eye. It shows that we are listening to them. And then of course, smiling makes the conversion more positive.</p> <p><b>3. Anticipate Guest Needs:</b> Nothing surprises your customer more than an employee going the extra mile to help them. Always look for ways to serve your customer in more ways than they expect. In doing so it helps them to know that you care and it will leave them with the "Feel Good Factor" that we are searching for.</p>	[5]