

CBSE | DEPARTMENT OF SKILL EDUCATION

AUTOMOTIVE (SUBJECT CODE 404)

CLASS IX (SESSION 2021-2022)

MARKING SCHEME

SECTION - A

(3 + 2 = 5 marks)

Answer any 3 questions out of the given 4 questions. Each question is of 1 mark.		1 x 3 = 3
Q.1	Hybrid Businesses are the mix of two or more types of businesses. For example in the case of Restaurants, they offer services in the form of a dining experience and food served is the product	1
Q.2	A Sole Proprietorship is the simplest form of business organization with only a single owner.	1
Q.3	Green Economy's objective is to reduce environmental risks and ecological shortages that aim for sustainable development, without degrading the environment.	1
Q.4	Renewable energy can be defined as the form of energy which is collected from renewable resources that are naturally refilled on a human time period. It includes sources such as sunlight, wind, rain, tides, waves, and geothermal heat.	1
Answer any 1 question out of the given 2 questions. Each question is of 1 mark.		2 x 1 = 2
Q.5	The two elements of entrepreneurship are ' Innovation ' and ' Risk-bearing '. Innovation: It is the act of introducing something new. It may be new product, service or a process. Risk-bearing: Starting something new always involves risk and uncertainties, because new business may invite profits or losses. Risk and uncertainties can also be because of external factors like competitors, market crash etc.	2
Q.6	Main sectors of Green Economy are as follows: <ul style="list-style-type: none">• E-waste management• Green Transportation• Renewable energy• Green construction• Water management	2

SECTION B

(4 + 8 = 12 marks)

Answer any 04 questions out of the given 06 questions		1 x 4 = 4
Q.7	Radiator's Pressure cap or Pressure cap helps to increase the pressure inside the radiator and raise the boiling point of coolant.	1
Q.8	The Slip Joint serves to adjust the length of the propeller shaft when demanded by the rear axle movements.	1
Q.9	The Blind Spot is an area on each side of the vehicle that the driver cannot see through the rear view mirrors (Left and Right).	1
Q.10	18 Years of age or 18 years is the minimum age to apply for a driving license to drive the two wheeler of above 50 cc engine capacity.	1

Q.11	Pollution can be defined as an undesirable change in physical, chemical or biological characteristics of air, land and water or soil. Agents that bring about such an undesirable change are called Pollutants .	1
Q.12	From April 01, 2020 the automotive manufacturers in India begin producing only BS-VI emission standards compliant vehicles.	1
Answer any 04 questions out of the given 06 questions		2 x 4 = 8
Q.13	The main functions of tyres are as given below: 1. Carry the load of the vehicle. 2. Absorb the small road shocks. 3. Reduce the vibration to some extent. 4. Transmit the power from the engine through gearbox propeller shaft and rear axle to the ground with which the vehicle moves. 5. The treads made on the tyres grip the road for better traction.	2
Q.14	The main functions of Suspension System: 1. It provides comfort. 2. It gives cushioning effect. 3. It relieves strain on the frame and other components due to the road shocks. 4. It maintains body level and prevents it from rolling. 5. It provides a good contact for road holding, i.e. the system must always keep the tyres in contact with the road. 6. It transfers driving torque to the wheels as well as breaking force to the chassis.	2
Q.15	Road safety tips for motorists are: 1. Don't use your mobile phone whilst driving. 2. Use seat belt in the back seat also. 3. Don't drive after consuming alcohols. 4. Always adhere to speed limits. 5. Take special care about children, senior citizens and pedestrians. 6. If tired, don't drive 7. Always observe and anticipate actions by other road users. 8. Maintain safe distances. 9. Always wear helmets and seat belts. 10. Pedestrians should walk cautiously and always cross the road through Zebra crossing.	2
Q.16	Various aspects which involves the Road Safety are as given below: 1. The design of roads and highways 2. Laws pertaining to traffic and vehicles 3. Systems of traffic safety and control 4. Driver education 5. School students and mass education about road safety 6. Traffic and road safety signs 7. Vehicle design 8. Motor vehicle safety inspection and maintenance.	2
Q.17	Different Pollutants released from the automobiles are: 1. Carbon monoxide (CO) 2. Carbon Dioxide (CO ₂) 3. Oxides of Nitrogen (NO _x) 4. Oxides of Sulfur (SO _x) 5. Particulate matter (PM) or soot 6. And Unburnt hydrocarbons (UBHCs)	2
Q.18	Some other ways to control pollution are to: 1. Keep car one day off in a week 2. Pool the car for going to office 3. Use bicycle for short distances 4. Keep your vehicle properly maintained 5. Using public transports, metro train is best example of controlling pollution and providing comfort to the public.	2

SECTION C
(COMPETENCY BASED QUESTIONS)

(2 x 4 = 8 marks)

Answer any 02 questions out of the given 03 questions		
Q.19	<p>The main requirements of a good clutch are:</p> <ol style="list-style-type: none"> 1. Torque transmission: The clutch should be able to transmit maximum torque of the engine. 2. Gradual engagement: The clutch should engage slowly to avoid sudden jerks. 3. Heat dissipation: The clutch should be able to dissipate large amount of heat generated due to friction. 4. Dynamic balancing: The clutch should be dynamically balanced. 5. Vibration damping: The clutch should have suitable mechanism to damp vibrations to eliminate noise produced during the power transmission. 6. Size: The clutch size should be as small as possible so that it will occupy minimum space. 7. Free pedal play: The clutch should have free pedal play in order to reduce effective load on the carbon thrust bearing and its wear. 8. Easy in operation: The clutch should be easy to operate. 9. Lightness: The driven member of the clutch should be made as light as possible. 	
Q.20	<p>Safety and Security Systems of Modern Vehicles: There are different safety and security systems are available in the market and some of which are fitted by the manufacturer. Following are the few active and passive security systems.</p> <p>(Answer any 4 of the following)</p> <ol style="list-style-type: none"> 1. Safety Glass: The safety glass employed in modern vehicles are laminated or tempered. These types are said to be safety glass because of their construction. Laminated plate glass is used to make all windshields. This type of glass consists of two thin sheets of glass with a thin layer of clear plastic between them. When this type of glass is broken, the plastic material will tend to hold the shattered glass in place and prevent it from causing injury. 2. Seat Belt: Sometimes it is also called as safety belt. It is designed to secure the occupants of a vehicle against harmful movement that may result during a collision or a sudden stop. In modern cars seat belts are also provided for rear seat occupants also. 3. Airbags: It is a vehicle safety device. This is one of the passive safety systems for the occupants of car. The electrical system of air bags includes the impact sensors and the electronic control module. When there is an accident the sensor detects the impact and the air bag operates to save the driver and other occupants. 4. Energy-Absorber Safety Bumpers: Modern vehicle bumpers are designed to absorb the energy of a low-speed impact, minimizing the shock directed to the frame and to the occupants of the vehicle. Most energy absorbers are mounted between the bumper face bar or bumper reinforcement bar and the frame. 5. Security and Antitheft Devices: There are three basic types of antitheft devices available: locking devices, disabling devices, and alarm systems. 	4
Q.21	<p>Automobile Pollution and Its Control: Automobiles are said to be one of the major causes for atmospheric pollution at least in the metro cities.</p> <p>Main causes of automotive pollution:</p> <p>Poorly design and poorly maintained automobiles: You must have seen on roads a bus or truck or car or tempo releasing black smoke. This is because of poor maintenance of the vehicle.</p>	4

	<p>Incomplete burning of fuel air mixture: Poorly maintained vehicle's engine does not burn the fuel completely or properly. It can also happen because of improper mixture of air and fuel.</p> <p>Adulterated or poor quality of fuel: Petrol or diesel mixed with non-standard liquids/ substances increase the pollution.</p> <p>Excess use of clutch while driving: The habit of riding on clutch while driving increase the fuel consumption and increase the pollution.</p> <p>Its Control:</p> <p>Proper maintenance of automobiles along with use of lead-free petrol or diesel can reduce the pollutants they emit.</p> <p>Catalytic converters, having expensive metals namely platinum-palladium and rhodium as the catalysts, are fitted into automobiles for reducing emission of poisonous gases. As the exhaust passes through the catalytic converter, unburnt hydrocarbons are converted into carbon dioxide and water. Also, carbon monoxide and nitric oxide are changed to carbon dioxide and nitrogen gas, respectively. Motor vehicles equipped with catalytic converter should use unleaded petrol because lead in the petrol reduces effectiveness of the catalyst.</p> <p>Good driving habits: It reduces the pollution by reducing the fuel consumption.</p>	
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