

**FIRST YEAR KGCEEXAMINATIONIN AUTOMOBILE ENGINEERING  
AUTOMOBILE ENGINEERING-1 (TRADE THEORY)**

**ANSWER KEY**

MODEL QUESTION PAPER SET-1

**PART-A**

*(There should be at least 3 questions from each module)*

I

(MaximumMarks: 20x1 Marks = 20 Marks)

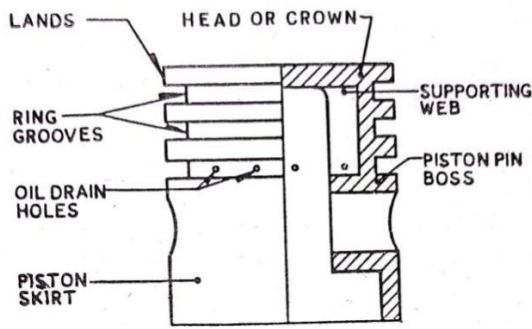
Qn. No.	Answers	Mark	Total Mark
1	b) Piston ring compressor.	1	1
2	a) Tachometer	1	1
3	c) Light motor vehicle	1	1
4	b) Stroke	1	1
5	a) An engine.	1	1
6	d) Piston pin	1	1
7	d) Carburetor	1	1
8	a) Multi point Fuel Injection	1	1
9	c) Common rail	1	1
10	a) Water jackets	1	1
11	b) Viscosity	1	1
12	d) Clutch	1	1
13	a) Clutch disk.	1	1
14	b) Continuously variable transmission	1	1
15	c) Spur gear	1	1
16	a) Universal joint.	1	1
17	c) Differential	1	1
18	b) Full floating type	1	1
19	b) Torsion bar.	1	1
20	a) Camber	1	1

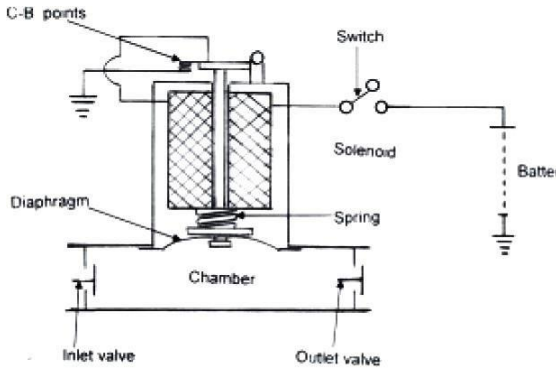
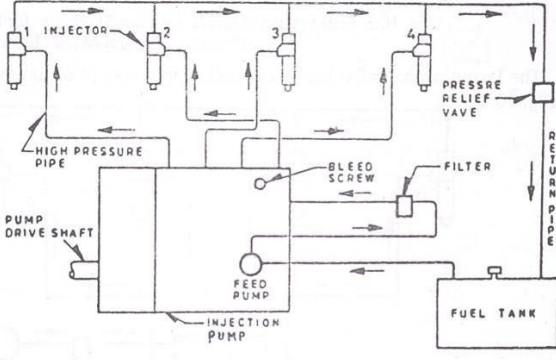
**PART-B**

(MaximumMarks: 8x5 Marks = 40 Marks)

II Answer *any eight* questions from the following. Each question carries marks.5 Marks.

Qn. No.	Answers	Mark	Total Mark
1	The major components of an Automobile are:	1x5	5

	<p>(a) The Engine or Power Plant : It is source of power.</p> <p>(b) The Frame and Chassis : It supports the engine, wheels, body, braking system, steering, etc.</p> <p>(c) The transmission which transmits power from the engine to the car wheels. It consists of clutch, transmission, shaft, axles and differential.</p> <p>(d) The body.</p> <p>(e) Accessories including light, air conditioner/hearer, stereo, wiper, etc,</p>																				
2	<table border="1"> <tr> <td colspan="2" data-bbox="316 491 1224 562">Write any five points of the followings</td> </tr> <tr> <td data-bbox="316 562 756 604">Four stroke engine</td> <td data-bbox="756 562 1224 604">Two stroke engine</td> </tr> <tr> <td data-bbox="316 604 756 808">The working cycle is completed in four strokes of the piston or two revolutions of the crank shaft. Thus one power stroke is obtained in every two revolution of the crankshaft</td> <td data-bbox="756 604 1224 808">The working cycle is completed in two strokes of the piston or one revolutions of the crank shaft. Thus one power stroke is obtained in each revolution of the crankshaft</td> </tr> <tr> <td data-bbox="316 808 756 844">Heavier flywheel is needed</td> <td data-bbox="756 808 1224 844">Lighter flywheel is needed</td> </tr> <tr> <td data-bbox="316 844 756 911">The four stroke engine contains valve and valve mechanism.</td> <td data-bbox="756 844 1224 911">The two stroke engine has no valves but only ports.</td> </tr> <tr> <td data-bbox="316 911 756 947">Thermal efficiency is high</td> <td data-bbox="756 911 1224 947">Thermal efficiency is low.</td> </tr> <tr> <td data-bbox="316 947 756 982">Volumetric efficiency is more.</td> <td data-bbox="756 947 1224 982">Volumetric efficiency is less</td> </tr> <tr> <td data-bbox="316 982 756 1115">Because of the heavy weight and complication of valve mechanism, the initial cost is higher.</td> <td data-bbox="756 982 1224 1115">Because of the light weight and the simplicity due to the absence of valve mechanism, the initial cost is cheaper</td> </tr> <tr> <td data-bbox="316 1115 756 1251">Four stroke engines are used where efficiency is important, e.g. in cars, busses, etc.</td> <td data-bbox="756 1115 1224 1251">Two stroke engines are used where lower cost is required in two wheelers, e.g. scooters and motorcycles.</td> </tr> </table>	Write any five points of the followings		Four stroke engine	Two stroke engine	The working cycle is completed in four strokes of the piston or two revolutions of the crank shaft. Thus one power stroke is obtained in every two revolution of the crankshaft	The working cycle is completed in two strokes of the piston or one revolutions of the crank shaft. Thus one power stroke is obtained in each revolution of the crankshaft	Heavier flywheel is needed	Lighter flywheel is needed	The four stroke engine contains valve and valve mechanism.	The two stroke engine has no valves but only ports.	Thermal efficiency is high	Thermal efficiency is low.	Volumetric efficiency is more.	Volumetric efficiency is less	Because of the heavy weight and complication of valve mechanism, the initial cost is higher.	Because of the light weight and the simplicity due to the absence of valve mechanism, the initial cost is cheaper	Four stroke engines are used where efficiency is important, e.g. in cars, busses, etc.	Two stroke engines are used where lower cost is required in two wheelers, e.g. scooters and motorcycles.	1x5	5
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3	 <p>Sketch Parts(any 6parts)</p>	2 6x1	5																		

<p>4</p>	 <p>It is a diaphragm type pump, but it is operated electrically. By turning on the ignition switch, the solenoid winding generates magnetic flux, which pulls the armature and the diaphragm moves up. The upward movement of the diaphragm creates suction, and the fuel is drawn into the chamber through the inlet valve. But as soon as the armature moves up it disconnects the electric supply, the magnetic flux collapses and the armature falls down, causing the diaphragm to move to create pressure in the pump chamber. This causes the outlet valve to open and inlet valve to close. The fuel goes out to the carburetor. The downward movement of the armature again sets electric supply to the solenoid, and the same process is repeated, the pump continues to operate until the ignition switch is turned off.</p>	<p>2.5</p> <p>2.5</p>	<p>5</p>
<p>5</p>	 <p>Lay out Parts (any 6 parts)</p>	<p>2</p> <p>3</p>	<p>5</p>
<p>6</p>	<ol style="list-style-type: none"> <li>1. Engine can be installed anywhere on the vehicle</li> <li>2. Volumetric Efficiency of the water-cooled engine is more than the air-cooled engine</li> <li>3. Uniform cooling of the cylinder, cylinder head, and valves.</li> <li>4. The specific fuel consumption of the engine improves by using a water cooling system.</li> <li>5. Engine is less noisy as compared with air-cooled engines, as it has water for damping noise.</li> </ol>	<p>1x5</p>	<p>5</p>

7	<p>Write any five properties</p> <p>(i) Viscosity. Viscosity of the oil is the measure of its resistance to flow. Light oil has low viscosity and heavy oil has high viscosity. The rise of temperature decreases viscosity and fall of temperature increases it. The lighter oils are used in the winter where as heavier in summer. Therefore a good lubricant should have approximately the same viscosity at all the temperatures.</p> <p>(ii) Physical stability The Lubricating oil must be stable physically at the lowest and highest temperature encountered in practices.</p> <p>(iii) Chemical stability At higher temperatures the oil should remain chemically stable.</p> <p>(iv) Resistance against corrosion The oil should not have any tendency to corrode the oil lines, crank case, and other engine parts with which it comes in contact</p> <p>(v) Pour point It is the lowest temperature at which the lubricant can be poured. This point can be varied by putting certain additives into the oil. Thus the oil having lower pour points are being used in cold countries, whereas of higher pour points in hot countries.</p> <p>(vi) Flash point and Fire point. The flash point is the lowest temperature at which the oil flashes when fire is brought on its surface. If this oil is further heated, then a temperature at which it begins to burn continuously is called fire point. Therefore these points of lubricating oil must be sufficiently high so that it may not flash or burn during service.</p> <p>(vii) Cleanliness. The oil should be sufficiently clean and stable itself so that the crank case, oil sump and oil lines are kept clean. Further, it must contain agents, called detergents, which removes the impurities from the engine parts during oil circulation</p>	1x5	5																		
8	<table border="1"> <tr> <td colspan="2" data-bbox="316 1266 1226 1329">Write five differences</td> </tr> <tr> <td data-bbox="316 1329 771 1392">Multi-Plate Clutch</td> <td data-bbox="771 1329 1226 1392">Single Plate Clutch</td> </tr> <tr> <td data-bbox="316 1392 771 1455">There are more than two pairs of friction surfaces in contact.</td> <td data-bbox="771 1392 1226 1455">A total of two pairs of friction surfaces are in contact.</td> </tr> <tr> <td data-bbox="316 1455 771 1518">It is composed of two or more clutch plates.</td> <td data-bbox="771 1455 1226 1518">There is only one clutch plate on it</td> </tr> <tr> <td data-bbox="316 1518 771 1581">It ensures a smooth and gradual engagement.</td> <td data-bbox="771 1518 1226 1581">It does not ensure a smooth Engagement.</td> </tr> <tr> <td data-bbox="316 1581 771 1644">It requires less space.</td> <td data-bbox="771 1581 1226 1644">It requires more space.</td> </tr> <tr> <td data-bbox="316 1644 771 1707">For the same size, torque transmission capacity is more.</td> <td data-bbox="771 1644 1226 1707">For the same size, torque transmission capacity is less.</td> </tr> <tr> <td data-bbox="316 1707 771 1833">Since it has a number of friction plates instead of a single, frictional power loss is more.</td> <td data-bbox="771 1707 1226 1833">Frictional power loss is less.</td> </tr> <tr> <td data-bbox="316 1833 771 1896">For the same power transmission,</td> <td data-bbox="771 1833 1226 1896">For the same power transmission,</td> </tr> </table>	Write five differences		Multi-Plate Clutch	Single Plate Clutch	There are more than two pairs of friction surfaces in contact.	A total of two pairs of friction surfaces are in contact.	It is composed of two or more clutch plates.	There is only one clutch plate on it	It ensures a smooth and gradual engagement.	It does not ensure a smooth Engagement.	It requires less space.	It requires more space.	For the same size, torque transmission capacity is more.	For the same size, torque transmission capacity is less.	Since it has a number of friction plates instead of a single, frictional power loss is more.	Frictional power loss is less.	For the same power transmission,	For the same power transmission,	1x5	5
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	<p>distance in the same time.</p> <ul style="list-style-type: none"><li>• It increases the torque by reducing the speed.</li></ul>		
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