

One Year Diploma, Auto Mobile 2014  
Model Answer

Subject:- Internal Combustion Engine, Paper-I Paper Code:- 402101

Sets (I) / (II)

Q.1 M.C.Q. / Objectives

(i) - d, (ii) a, (iii) c, (iv) b, (v) a  
(vi) - b, (vii) a, (viii) a, (ix) a, (x) b

Q.2. (a) I.C. engine is defined as an engine which converts heat energy produced by combustion of fuel inside the cylinder into useful work. It has wide application in industries, automobiles and <sup>power</sup> agriculture.

(b) In a four stroke external combustion engine, the sequence of strokes are suction stroke, compression stroke, power or expansion stroke and exhaust stroke. During suction stroke fresh charge comes inside <sup>the</sup> cylinder. During compression stroke charge is compressed upto its compression ratio. After combustion of fuel expansion takes place and power is generated. During exhaust stroke the burnt gases are swept out from cylinder.

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Sets (D) / (H)

Q2. (c) The important function of the cylinder block in an engine is to support all major components like piston, crankshaft, connecting rod, push rod, cooling water pump assembly, oil pump assembly inside it. It should must have sufficient strength to withstand the rotational forces and vibration during running of an engine.

Q.3 (a) The important function of carburetor is to provide a mixture of fuel and air in required proportion as per the need of the engine. At time of starting and higher speed, engine require rich mixture of fuel and air, while at the time of running at normal speed, it requires lean mixture.

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3(b) The purpose of lubricating system is to reduce the friction in an engine produced due to moving parts. It increases the overall power generated by the engine by minimising frictional losses. Lubricating system also carries away heat from engine components and keeps them cool. It washes away the dirt, and wear particles from the engine components.

3(c) The main function of flywheel is to minimise the fluctuation of speed of an engine during suction, compression, and exhaust strokes in completing one cycle. During power stroke the speed of engine increases, then the rotational energy is absorbed by the flywheel. This energy is supplied by flywheel to the crankshaft during suction, compression, and exhaust strokes to keep the speed of engine constant.

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Q4. The four stroke petrol engine has four strokes suction, compression, power and exhaust in sequence. During suction stroke, air and fuel mixture comes inside the cylinder from carburetor through intake manifold. Piston moves from top dead centre (TDC) to bottom dead centre (BDC). During compression stroke, the sucked charge is compressed inside the cylinder. The inlet and exhaust valves are closed. The piston moves from BDC to TDC. The compression ratio of the engine is achieved. ~~During~~ At the end of compression the charge is ignited by spark plug. The combustion of fuel starts and expansion of ~~the~~ gases generate power on piston. Piston moves from TDC to BDC. During exhaust stroke, the burnt gas are swept out from the cylinder. Piston moves from BDC to TDC. This cycle is repeated again and again.

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Q.5.

Two Stroke	Four Stroke
(i) Simple is design	(i) Complicated in design.
(ii) Inlet and exhaust ports are used	(ii) Inlet and exhaust valve are used.
(iii) Suction and compression takes during one stroke while power and exhaust takes during second stroke.	(iii) Suction, compression, power and exhaust strokes takes place separately.
(iv) Cycle is completed during one revolution of crankshaft.	(iv) Cycle is completed during two revolution of crankshaft.
(v) It causes more air pollution due to incomplete combustion.	(v) It causes less air pollution due to nearly complete combustion of fuel.
(vi) It is suitable for smaller and marine engines	(vi) It is suitable for small, medium and large size engines.
(vii) It generates less vibration.	(vii) It generates more vibration.

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Sets (I) / (II)

Q.6 The five important parts of an I.C. engine are

(i) Cylinder block. - Its main function is to support different component of an engine inside it during an It should must be robust. It is the main structure of the engine.

(ii) Cylinder head. It is placed on top of the cylinder block. It makes a seal on the cylinder piston arrangement by using gaskets. It accommodates inlet and exhaust valves, spark plug or injectors.

(iii) Piston. It reciprocates inside cylinder and transfers the power generated to the crankshaft. It is made of aluminium alloys. It withstands high temperature.

(iv) Crankshaft. It is linked with piston through connecting rod converts reciprocating motion to

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the piston into rotary motion of crankshaft. Flywheel is assembled at one end of the crankshaft.

(v) Camshaft. Its main function is to open and close the inlet and exhaust valves at appropriate time during different strokes of an engine. Its rotation is provided through belt or chain drive from crankshaft.

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