EXPERIMENT NUMBER: 2

**OBJECTIVE:** To study the four Stroke Petrol engine.

**THEORY:**

HEAT ENGINE: An engine that drives heat energy from the combustion of fuel or any other source and converts energy into mechanical form.

CYLINDER BLOCK: It is the main supporting structure of various components. It is cast as a single unit.

CYLINDER: It is the space in which the piston persecutes all the process of working fluid occurs in it and it is supported by cylinder block.

PISTON: It is the cylindrical component field into the cylinder creating the moving boundary of the combustion system. It fits perfectly into the cylinder providing the gas-tight space with the rings and lubricant.

INLET MANIFOLD: The pipe which connects the inlet to the inlet valve of the engine and through which air-fuel mixture is drawn into the cylinder is called the inlet manifold.

EXHAUST MANIFOLD: The pipe which connects the exhaust system to the exhaust valve of the engine and through which the product of the engine escape into the atmosphere is called the exhaust manifold.

INLET AND EXHAUST VALVE: Valves are commonly mushroom-shaped. these are provided either of the cylinder head on the side of the cylinder for resolution of charge coming into the cylinder(inlet valve) and for escaping the product of combustion( exhaust valve) from the cylinder.

SPARK PLUG: It is a component to mistle the combustion process in Spark-ignition engine And is located on the cylinder head.

CRANK SHAFT: It converts the reciprocating motion of the piston into useful rotary motion of the dp shaft. It is increased in the crankcase.

PISTON - PIN: Piston ring fitted into the shafts around the piston provider types sale between the Piston and the cylinder well and has prevented leakage of combustion gas.

FLY - WHEEL: The net torque imparted to the crankshaft during one complete cycle of operation of the engine causing a change in the angular velocity of the shaft in order to achieve uniform torque on extra mass in the form of a wheel is stretched to the output shaft and this wheel is called the flywheel.

**OPERATION OF A FOUR STROKE SI ENGINE:**

The cycle of operation for an ideal four-stroke Si engine consists of the following four strokes:

* SUCTION
* COMPRESSION
* EXPANSION
* EXHAUST

SUCTION: Suction starts when the piston is TDC and about to move downwards. The inlet valve is open at the time an exhaust valve is closed. Due to the suction created by the motion of the piston the charge consisting of fuel-air - the mixture is drawn into the cylinder. When the Piston reaches BDC that suction stroke ends and the inlet valve closes.

COMPRESSED STROKE: The charge taken into the cylinder during the suction stroke is compressed to the return stroke of the piston during the stroke both inlet and exhaust valve are in the closed position the mixture is compressed into the clearance volume at the end of the compression stroke the mixture is ignited with the help of spark plug located on the cylinder head. During the process, the chemical energy e of the fuel is converted into heat energy and produces a temperature rise of 2000 Celsius.

EXPANSION STROKE: The high pressure of the burnt gases forces the piston towards BDC both valves are in the closed position. In the case of a four-stroke engine only during the stroke power is produced both pressure and temperature decrease during the process.

EXHAUST STROKE: At the end of the expansion stroke the exhaust valve opens and the inlet valve prevents closed the pressure falls to atmospheric level as the world gases escape the Piston starts moving towards the BDC and to TDC and sweeps the burnt gases out from the cylinder at most atmospheric pressure the exhaust valve closes when the Piston reaches at TDC at the end of the exhaust stroke and some residual gases kept in the clearance volumes remain in the cylinder.