

By OnlineInterviewQuestions.com

IC Engine Interview Questions

Q1. What is a Internal Combustion Engine?

An **Internal combustion engine** is a heat engine where the combustion of a fuel occurs with an oxidizer(air). In this engine, both the reactant and product of the combustion used as working fluid of the engine. The heat released from the combustion of fluid supplies its energy to the engine. The energy produced from the hot gaseous product of combustion acts on a piston, nozzle, a turbine blade. The internal combustion engine is extensively used in vehicles, boats, trains, aeroplanes and it is the most common form of heat engine.

Q2. List some advantages of internal combustion engines?

There are a number of advantages of internal combustion engines. Some are mentioned below:

1. In comparison with an external combustion engine, the size of this engine is very less.
2. These engines have a high power to weight ratio.
3. This engine is good for applications which require small power.
4. As compared to the external combustion engine, these engines are more portable.
5. Internal combustion engines are very safe to operate.
6. It does not take much time to start.
7. Usually, these engines have higher efficiency than their counterpart external combustion engine.
8. There is no chance of fluid to leak in an internal combustion engine.
9. Internal combustion engines require less maintenance.
10. It does not consume lubricant as much as an external combustion engine

Q3. What are limitations of internal combustion engines

Every coin has two faces. So, the internal combustion engine has both merits and demerits. Some of the limitations of the internal combustion engine are mentioned below: -

1. Only fine quality gaseous and liquid fuel can be used as fuel.
2. Most of the fuel used in these engines are very costly.
3. In comparison with an external combustion engine, the emission is generally high.
4. It cannot be used for large scale power generation.
5. Due to the detonation of fuel, a lot of noise is generated.

Q4. What is Compression ratio of I.C. engine?

Compression ratio in an internal combustion engine is defined as the ratio of the volume of the cylinder (when the piston is nearest with the head of the cylinder) and the combustion chamber (when the piston farthest out). Higher the ratio, more the air is compressed in the cylinder. In engines, the air is tightly compressed as it gives a powerful explosion from the air-fuel mixture which in turn makes more fuel to get used. Automotive engineers use this technique to design engines with full fuel efficiency.

Q5. What is carburettor in I.C. engine?

A carburettor is a device used in the internal combustion engine for mixing the air with the fuel for supplying a spark ignition system. The carburettor has various components used, for example, a choke, storage chamber for liquid fuel, the main jet, an accelerator pump, an idling jet and a venturi shaped airflow restriction. It is used only in those engines where spark ignition can occur like a Petrol engine.

Q6. What are Engine Pistons?

A **piston** is a cylindrical shape component present in engines that move reciprocating in the cylinder bore due to the forces made during the combustion process. The movable end of the combustion chamber is piston whereas the cylinder head acts as a stationary end. Mostly, pistons are made up of cast aluminium alloy and it provides superb and lightweight thermal conductivity.

Q7. List types of internal combustion engine?

There are many types of Internal combustion engine. Some important types are mentioned below:

? On the basis of fuel used

1. Diesel Engine
2. Petrol Engine (or Gasoline Engine)

? On the basis of strokes per cycle

1. Two-stroke Engine
2. Four-stroke Engine

? On the basis of the type of ignition

1. Spark Ignition Engine (S.I. Engine)
2. Compression-Ignition Engine (C.I. Engine)

? **On the basis of the arrangement of valves**

1. L-head Engine
2. I-head Engine
3. T-head Engine
4. F-head Engine

? **On the basis of the type of cycle**

1. Otto Cycle Engine
2. Diesel Cycle Engine
3. Dual Cycle Engine

? **On the basis of the cooling system used**

1. Air-cooled Engine
2. Water-cooled Engine

? **On the basis of application**

1. Automobile Engine
2. Aircraft Engine
3. Locomotive Engine
4. Marine Engine
5. Stationary Engine

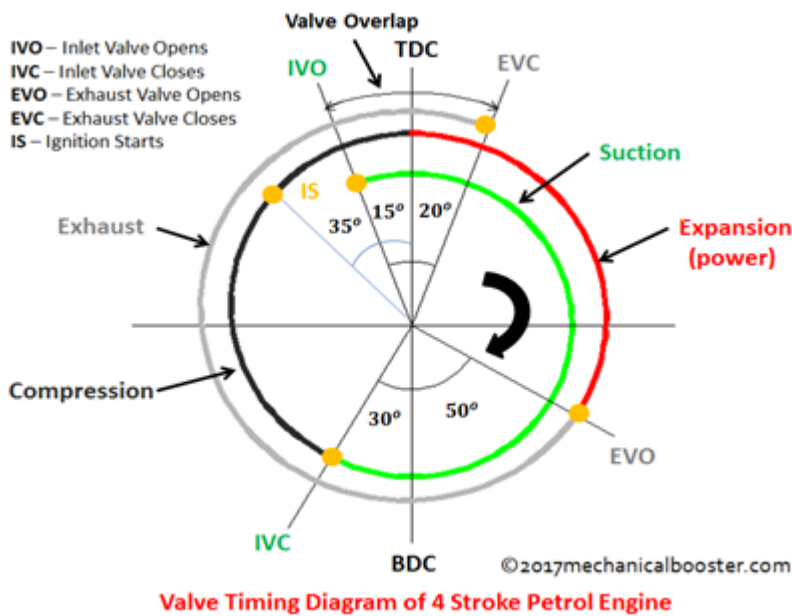
The list is not ended here. There are still many more types of Internal combustion engine used in various applications.

Q8. Please explain Combustion thermodynamics?

Q9. What is Combustion modelling?

Q10. What is valve timing diagram?

The valve timing diagram comprises a 360-degree figure which represents the opening and closing of the intake and exhaust valve of the engine which in turn depends upon the movement of the piston from TDC to BDC. Therefore, valve timing graph represents the relation between piston and valve and is controlled by setting a graphical representation between these two. The diagram is shown below:



Q11. [Explain Spark ignition engines?](#)

It refers to the combustion process where the air-fuel mixture is ignited by a spark from a spark plug. This term is used in petrol engines, not the diesel engine where initiation of the combustion process does not require any external spark.

Q12. [What is Crankshaft?](#)

The **Crankshaft** is responsible for the engine's proper working. It transforms the piston's linear motion into rotational motion.

As Crankshaft faces a very high level of cycling loading, it is very important that they have very high fatigue strength and it should wear resistance to work for long term.

Q13. [Explain the function of Fly wheel?](#)

The main function of Flywheel is to store rotational energy. The amount of energy stored in the Flywheel is directly proportional to the square of its rotational speed. There are some common functions of Flywheel like to provide continuous energy when the energy source is discontinuous and to deliver energy at a faster rate.

For example, a flywheel maintains the constant angular velocity of the crankshaft in a back and forth engine. The flywheel stores the energy when torque is exerted on it by a firing piston, and it releases the stored energy to the crankshaft when a piston compresses fresh air and fuel.

Q14. What is scavenging?

The replacement of the exhaust gas with fresh air/fuel mixture in a cylinder is called scavenging for the next cycle. As the exhaust gases can cause improper combustion so it is necessary to perform scavenging to maximize the power output.

Q15. What is indicator diagram?

The term indicator diagram was developed by **James Watt** and **John Southern** which represent the diagram of the pressure change and volume within a cylinder of a back and forth engine. This diagram is used to calculate the power generated and work done in an engine cylinder which helps the engineer in improving the efficiency of steam engines.

Q16. What is flame front?

In an explosion, the combustion reaction takes place within a region of space and this region of space is called the flame front. It is a zone where the fuel and the combustive mixed up more precisely. An explosion can be deflagration or a detonation depending on the speed of the flame front. In this flame front, as the mixture is limited to a very narrow space, the temperature of the flames is often several thousand degrees.

Q17. What is ignition lag in SI Engine?

Ignition lag or ignition delay as the name suggests is the time interval between the passage of spark and the ignition of the fuel-air mixture.

Q18. What is 2-stroke IC Engine?

Two-stroke engines, as the name suggests, need two-piston movements (one cycle) to generate power. In this engine, the exhaust and the intake of the gas occur at the same time therefore the engine can produce power after one cycle. Pressure change allows the opening and closing of the valve (for intake stroke). This engine also

helps in better mixing of oil with fuel to add lubrication, which permits smoother strokes.

Q19. Name the fuel used by IC Engines?

Below fuels are used by **IC Engines**:

1. Gasoline is used for the spark-ignition internal combustion engine.
2. Diesel fuels are used for compression-ignition internal combustion engines.
3. Marine fuels are used for shipping.
4. Aviation turbine fuels are used for aviation turbines.

Q20. What is ATFT Technology used in Honda Hunk?

ATFT stands for **Advanced tumble induction Technology**. This technology gives a tumbling effect on the air-fuel mixture which increases fuel efficiency.

ATFT brings a spinning motion to the air-fuel mixture which as a result helps in better mixing of the fuel and air. Better mixing of these components brings more efficient burning of fuel and hence more power with less emission.

Q21. What is the 6 stroke engine?

Six stroke engines are the modified or updated engine that is designed to improve the two-stroke and four-stroke engine. These are applied to the internal combustion engine.

There are many advantages of using a six-stroke engine which is: -

- It increases fuel efficiency.
- It reduces mechanical complexity.
- It reduces efficiency.

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