

Aeronautical Engineering Interview Questions

Q1. What is Aerodynamics?

Aerodynamics is the study of the motion of air relative to solid objects like an airplane wing. It describes the way air moved around solid objects. It explains how an airplane can fly in the air. Anything that can move in the air follows the rule of aerodynamics, for example, a kite flying in the air. Even the laws of aerodynamics also apply to a car because air flows around it.

Q2. What did you choose Aerospace Engineering?

Q3. What is difference between Inviscid and Viscous flow?

In viscous flow, the substance's viscosity is essential, whereas, in inviscid flow, viscosity does not play any role.

Q4. What is the main function of propulsive thrust in aircraft?

Propulsion is defined as pushing forward or driving a thing forward, and a machine that produces thrust/force to push the object is called a propulsion machine. In airplanes, the propulsion is generated with the help of gas or fluid. An engine in the airplane accelerates the gas, and in reaction to it, acceleration produces a force on the engine. The amount of thrust produced depends on mass flow and the exit velocity of the gas. Thrust is applied by using Newton's third law of motion. Its SI unit is Newton.

There is four major propulsion system, which is mentioned below:

1. Propeller system
2. Turbine engine
3. Ramjet system
4. Rocket system

Q5. What are the laws of gyro-dynamics?

Gyro-dynamics is used to deal with gyroscopic motion, which is very important to create an aircraft application. In gyro-dynamics law, properties of rigidity are explained. In simple words, even if the gyroscope changes location, the axis of the spin will not change without the external force.

Laws of gyro-dynamics:

? If a rotating body is mounted and freely moves about an axis that passes through the center of mass, then the spin axis used will remain fixed in inertial space without displacing any of the frames.

? Suppose a constant torque is applied in any direction, such as along an axis, or perpendicular to the axis. In that case, the spin axis will move about an axis that is mutually perpendicular to both the spin and the torque axis.

Q6. What is continuum flow and free molecule flow?

Before describing the continuum flow, it is reasonable to know the meaning of the Knudsen number. Knudsen number is the mean free path of a fluid molecule divided by the length of the section in which the fluid is flowing.

Continuum flow is that flow that approaches zero Knudsen number. It can be achieved when the mean free path of a fluid molecule is tiny, or the section is enormous.

Free molecular flow is a type of flow in which the mean free path of the gas molecule is larger than the chamber.

Q7. What is yawing Motion?

A yawing rotation is the movement of a solid object either to the right or left of a yaw axis. In an airplane, the Yaw axis represents the airplane's coordinate, which is perpendicular to the wings in direction.

Q8. What are main areas of Aviation?

Q9. What is the main source of power in Aircraft?

The aircraft's primary source is an aircraft electrical system containing all the systems to produce, transmit, distribute, utilize, and store electrical energy.

The primary function of the electrical system is to generate electricity. The electrical system uses either a generator or an alternator. The power can be modified further with components like transformers, inverters, and rectifiers to change the voltage or current. The output of the generator is 115-120V/400HZ AC, 28V DC, or 14V DC-in most of the aviator.

Q10. What is strain? List its types?

A strain is defined as the length change ratio to the original length when the load is applied. Based on the type of loading, a strain can be divided into three types.

Normal strain - Normal strain is measured by dividing the change in length by the original length. It tells the relative amount of deformation in the structure due to the force applied.

Shear Strain - It is described as a ratio of change in tangential angle in the direction of the force applied.

Volumetric strain - It is described as the volume change ratio to the original volume.

Q11. What fuel is used in aeroplane?

To power up the aircraft, aviation uses fuel-based petroleum or synthetic fuel blends. These fuels have better qualities than fuels used for ground use. Some additives present in it are essential for enhancing properties necessary for fuel performance handling. In civil aviation, the turbine engines use Jet A-1 and JP-8. It is light kerosene-based fuel.

Q12. List some lift augmentation devices used on an Aircraft?

The most important lift augmentation devices used on an Aircraft are flaps, Kreuger flaps, and slats. There are also some devices that are less commonly used for, e.g., leading-edge root-extensions and boundary layer control devices.

Q13. What is the difference between aerodynamic balancing & mass balancing?