

Pilot Job Interview Questions And Answers



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Pilot Interview Questions And Answers Guide.

Question - 1:

List the main areas of aviation?

Ans:

Artificial intelligence

- * Aircrafts and parts
- * Advanced materials, composites and specialty metals
- * Computers, electronic components, and systems
- * Fighters and attack aircraft
- * Government defense policies and goals
- * Lasers
- * Navigation controls and guidance systems
- * Ordinance and Military vehicles
- * Computers, electronic components, and systems
- * Aviation electronic/Avionics
- * Robotics
- * Satellites
- * Search and detection equipments
- * Strategic defensive initiative
- * Sensors and instrumentation
- * Ships
- * Space vehicles and commercialization of space

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Question - 2:

Define stress analysis?

Ans:

People working on these areas as an aerospace engineer should have familiarity and exposure to NASTRAN and MAT LAB with knowledge on space environment and modeling of flexible dynamics. These aerospace engineers will be responsible to conduct stress analysis on metallic and composite structures. NASTRAN, IDEAD, Oracle, and PATRAN proficiency level is required. Their duties also include on aircraft, which are metallic and composite structures. This includes and understanding of control surface stiffness and loop calculations, finite element modeling (FEM), fatigue testing requirement and analysis.

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Question - 3:

What is the main source of power in aircraft?

Ans:

The main source of power is the hydraulic motor that is provided by the scheduled service and involves operations that allow technicians to solve complex system problems. This setup required certifying the technician to operate all the system the same way as it is been done with one system. The hydraulic motor needs to be operated the same way and maintained in a proper way. The alignment need to in synchronization with the aircraft auxiliary power unity (APU) before anything is done with the aircraft positioning. A standard need to, be followed to maintain the aircrafts and its parts equipped and working.

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Question - 4:

Explain the objectives of aerodynamics?

Ans:

Aerodynamics deals with the theory of flow of air and it has many practical applications in engineering. There are some objectives that are being used in aerodynamics and these are as follows:

- * It is used to predict the forces, moments and heat transfer from the bodies that is moving through the liquid.
- * It deals with the movement of wings or use of the wind force. This way it requires the calculations to be done for the aerodynamic heating of the flight vehicles and the hydrodynamic forces applied on the surface of the vehicle.
- * It is used to determine the flows that are moving internally through ducts. This way it makes the calculations and measurement of the flow properties that is inside the rocket and jet engines.



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Question - 5:

What sources are involved in aerodynamics?

Ans:

There are two sources that are involved in the case of aerodynamics forces and moments that are on the body. These forces are as follows:

- * Pressure distribution:

This is the distribution that is over the body surface

- * Shear stress distribution:

This is the distribution that is over the body surface

These sources are for the body shapes and it doesn't matter how complex they are. The mechanism that is being used to communicate with the bodies that is moving through a fluid. Both the pressure (p) and shear stress (?) having the dimension force per unit area. This helps the movement of the body through the fluid.

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Question - 6:

Which characteristics that keep solid and fluid different?

Ans:

- * When the force is applied tangentially on solid then it experiences a finite deformation and shear stress that is proportional to the deformation. Whereas, when the same shear stress is applied on the surface of fluid then it experiences continuous increasing deformation where, the shear stress is proportional to the rate of change of deformation.

- * The fluid dynamic is divided in three different areas. They are as follows: Hydrodynamics (flow of liquids), Gas dynamics (flow of gases) and Aerodynamics (flow of air). Whereas, the state of, solid doesn't represent any of the stages.

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Question - 7:

Which criteria need to be followed for an aircraft to be longitudinal statically stable?

Ans:

The criteria that are required for an aircraft to be longitudinal statically stable, is:

- * To have a nose-down pitching disturbance that is used to produce the aerodynamics forces to give a nose-up restoring moment.

- * This restoring moment that is produced should be large enough to return the aircraft to its original position after the disturbance.

- * The requirements are met by using the tail-plane that is horizontal stabilizer used to provide the stability to the aircraft.

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Question - 8:

Explain the functions performed by rudder?

Ans:

The rudder is involved in providing the movement to the ports that gives a lift force to starboard. This will allow the aircraft to turn and uses the ailerons effectively to bank the aircraft by minimum use of rudder. The functions performed by rudder are as follows:

- * It is used with different applications that are involved in taking off and landing to keep aircraft straight.

- * Providing assistance that is, limited only for the aircraft to turn correctly.

- * Used in applications during spin to reduce the roll rate of the aircraft and there are some applications that provides low speeds and high angles to allow the raising of the wings.

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Question - 9:

What are the main steps that required to solve the problems of aircraft flying high and at very large speed?

Ans:

There are various steps required to solve the problems of aircraft flying high and at very large speed are as follows:

- * Build stiff wings that allow and provide the resistance to torsional diversion beyond the maximum speed of the aircraft.

- * Use two sets of ailerons and one outboard pair that can be operated at low speeds.

- * Use of one inboard pair that can be used to operate on high speeds, this will have less twisting impact when the ailerons are positioned outboard.

- * Use spoilers that can be positioned independently or can be paired with ailerons. These reduce the lift on the down going wing by interrupting the airflow over the top surface.

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Question - 10:

Which mechanical properties required to know before performing maintenance?

Ans:

The mechanical properties provide the definition of the behavior of the material that is being put under the action of external forces. This is an important aspect to aeronautical engineering that is also used to gain knowledge for applications developed for aircrafts. This provides an overall view of the structure of the aircraft and the maintenance aspect of it. The properties used are as follows:

- * Strength,

- * Stiffness,

- * Specific strength and stiffness,

- * Ductility,

- * Toughness,

- * Malleability and elasticity.

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**Question - 11:**

What are the different types of modulus involved in mechanics?

Ans:

Modulus of elasticity is given by the Hooke's law that states that stress is directly proportional to strain, while the material remains elastic. The external forces that are acting on the material is just having the sufficient to stretch the atomic bonds this way the material can also return back to the original shape. The different types of modulus are as follows:

* Modulus of rigidity: this defines the relationship between the shear stress (τ) and shear strain (γ)

* Bulk modulus: this defines that if a body volume v is subjected to an increase in an external pressure then the volume will be changed by dV , this deformation will be change in volume not in shape.

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Question - 12:

Why is strain a major factor in aircraft engineering?

Ans:

Strain is when a material is altered in shape, this happens due to the fact that the force is acting on the material. The body is strained internally as well as externally without having any differences of dimension but it just has the differences at the atomic level. It is the ratio of change in dimension over the original dimension. It is very important due to the fact that building an aircraft requires the knowledge of these factors and the formulas that are associated with it to successfully implementing the parts together. There are three types of strain:

* Tensile strain

* Compressive strain and

* Shear strain

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Question - 13:

What are the different stress types present in aircraft operations?

Ans:

Stress is a result that is caused when a solid e.g. metal bar is subjected to an external force. Stress is defined as force per unit area and the basic unit includes MN/m^2 , N/mm^2 and Pa . There are basically three types of stress:

* Tensile stress:

It is the stress that is setup when the force tries to pull the material apart.

* Compressive stress:

It is the stress that is produced by the force that is trying to crush the material.

* Shear stress:

Is the stress that results from the force that tends to cut through the material i.e. tend to put one material slide over another one.

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Question - 14:

Which safety recommendations required while maintaining aircraft?

Ans:

The safety recommendations are required while dealing with the accidents and the inquiry of the aircraft's. The recommendations needed are as follows:

* CAA (Civil aviation authority) examines the applicability of self-certification of aircraft engineering and verifies the criticality of the tasks that need to be performed on the system. They also check the system for further services without doing any functional checks.

* Review of the system takes place to interpret the single components of the aircraft that is vital in its design.

* Reviewing of the quality assurance system and the reporting methods take place to encourage more better designs to be provided for the use.

* Reviewing the need to, introduce a format of job description and grades that is being provided to the engineers and managers.

* Providing a mechanism for an independent assessment to carry out the work audit and operations can be performed smoothly.

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Question - 15:

What are the components of aerospace engineering?

Ans:

Aerospace engineering deals with design and manufacture of aircraft or spacecraft structures, craft guidance systems, control and navigation's systems, developing tools for communication and finally the production of the aircraft or spacecraft. Each of these areas of aerospace engineering is crucial for efficient functioning of the aircraft or spacecraft. Hence, aerospace engineering has been divided appropriately and knowledge is imparted to aspiring engineers in each of these areas along with the necessary practical training to equip them to deal with the challenges in this field.

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Question - 16:

What is testing done in aerospace engineering?

Ans:

The testing of small rocket engines and entails development by researching on aerospace. They are responsible to perform and experiment on laboratory facility, which is dedicated to aerospace. One should be capable of solving problems by applying knowledge by solving problem of the research done. They will be working with technical team of researchers and they should have ability handle projects alone.

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Question - 17:

What are the responsibility of the spacecraft operations, dynamics, and controls?

Ans:



People working on these areas as aerospace engineers should have familiarity and exposure to NASTRAN and MATLAB with knowledge on space environment and modeling of flexible dynamics. These aerospace engineers will be responsible to work in the areas of structural control, momentum control, line of sight (LOS), spacecraft mission design, control of space boards payloads, operational engineering.

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Question - 18:

Does knowledge of mathematics of science is required to get into aerospace engineering?

Ans:

The basic understanding of Math is important, as it is not used at all the time during the course of aerospace engineering. One should have a basic understanding of mathematical definitions and knowledge on computers is very important as the computer programs will help in doing simple calculations and verify the results are reasonable.

However, on the science front it is very important to have a very good understanding on various subjects like dynamics and mechanics in physics, strong emphasis on chemistry, electromagnetism. For a good engineer one should know how law of forces makes things happen. In addition, if you are good at physical sciences when opposed to life sciences like biology you will be a fit candidate for aerospace engineering.

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Question - 19:

What you know about Aerodynamics/performance analysis?

Ans:

Aerodynamics/performance analysis in military programs include responsibility like analyzing aerodynamics impacts which effects from external modifications, developing mission profiles based on requirements from the customer, performance data of the mission which includes take off and landing details, en route and mission data performance. Analyze the configurations using the dynamics, which are fluid and computational.

Additional task may include support for wind tunnel planning for test flight. Documentation, test support, data analysis should be done on regular basis. Co ordination of aerodynamics with multi discipline teams and data should be provided for support flight management system or mission planning software.

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Question - 20:

What you know about differences between Aeronautical Engineering and astronautical engineering?

Ans:

Aeronautical engineering works on tunnel tests, analyzing flight test data, manned space flights, planning future space missions, spacecraft operations, designing and testing robotic systems, developing new propulsion system, computing optimum flight trajectories, developing communication systems for distance space probes and designing new rockets.

Astronautical engineer includes designing power systems for spacecraft structure, developing communications systems for distant space probes, developing hardware skills for operations in spacecraft, designing and testing robotic systems, developing new propulsion systems and computing optimum flight.

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Question - 21:

Define day-to-day responsibilities of Aerospace engineering?

Ans:

Each job profile even in aerospace industry differs from others. Mainly in aerospace, there are two branches or field. One is aeronautical and other is astronautical engineering.

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Question - 22:

What are the requirement to become a Professional Engineer (PE) in the field of Aerospace?

Ans:

Professional Engineer license is required for people who aspire to go in as officially approved engineer. The design specification is done by self-employed people or working in small business. General aerospace engineers work for government or for big companies and hence few people are not very keen on becoming PE's. To become a PE one has to pass an exam on fundamentals of engineering which takes alot of hours to gruel and work under a licensed PE for about four years. In addition, they have to grow through a principle and practice of engineering exam, which requires about 8 hours.

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Question - 23:

List the three tactical elements of electronic warfare?

Ans:

* Electronic warfare has three main elements:

ES - Electronic support - This has high passive acquisition intelligence about friend and foe

EA - Electronic attack - that has passive and active denial of RF spectrum

EP - Electronic protection protects friendly personnel and assets by active and passive techniques.

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Question - 24:

Where SPICE was developed?

Ans:

This is the widely used analog simulator, which was developed at electronics research lab of California University.

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**Question - 25:**

What you know about SPICE?

Ans:

The full form of SPICE is Simulation program with integrated circuit emphasis.

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Question - 26:

Who are the aerospace engineers?

Ans:

Aerospace Engineers are involved in all aspects of aeronautics (working with aircraft) and astronautics (working with spacecraft). They conduct research, and design and develop vehicles and systems for atmospheric and space environments. These engineers often specialize in one of many areas such as aerodynamics, propulsion, flight mechanics, orbital mechanics, fluids, structures, guidance & control, and computation.

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Question - 27:

What you know about history of aerospace engineering?

Ans:

This branch of engineering was unheard of until the Wright Brothers made their historic flight in 1903. After this event, major developments took place in the field of aeronautical engineering, which basically deals with everything related to aircraft's. During the First World War, many new aircraft's and missiles were developed for military purposes and this gave further boost to its growth.

The study of space was also included in aerospace engineering only in 1958. This expanded the scope of aerospace engineering and gave it a greater chance for taking risks and putting innovative ideas into action. The progress of this branch of engineering is being overseen by many major aerospace corporations like Airbus, Boeing, Honeywell, Embraer, etc.

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Question - 28:

What another kind of jobs expect pilot are available for an aerospace engineer?

Ans:

The field of aerospace technology offers a wide range of employment opportunities to those with the proper educational background. An aerospace team is made up of engineers, scientists, and technicians. Positions are available through the private sector as well as within the U. S. Government. Examples of major engineering roles in the aerospace industry include:

*Analysis

*Design

*Materials and Processes

*Systems Engineering

*Software Development

*Manufacturing

*Flight Research

*Field Service

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Question - 29:

What is aerospace engineering what education will I need?

Ans:

Generally, a Bachelor's Degree in Aerospace Engineering is required to work as an aerospace engineer. The University of Texas offers this degree as well as Master's and Doctorate programs. Successful aerospace engineers have the proper educational background, possess good communication skills, and are committed to being a part of a team.

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