Spacecraft Engineering Job Interview Questions And Answers

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Spacecraft Engineering Interview Questions And Answers Guide.

Question - 1:

What are the personal characteristics to be successful in spacecraft engineering?

Ans:

* Patience in order to be able to zoom out and see a problem from a high-level point of view, dogged determination in order to be able to drill down and see a problem at the pixel or 16th-decimal-place-level.
* Ability to be congenial and collegiate in order to work well with a diverse group of staff, engineers and researchers.
* Technical aptitude such that you can understand concepts from engineering, mathematics and computer science.
* Logical aptitude such that you can differentiate between cause, effect and incidentals in order to more efficiently solve problems.
* Most importantly, creative ability such that you can understand and formulate tangible descriptions of problems and find solutions.

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Question - 2:

What are your main tasks of spacecraft engineer?

Ans:

As a simulation engineer for the vertical motion simulator, my primary task is to integrate simulation models and other necessary software and hardware into the vertical motion simulator real-time simulator environment to allow researchers and designers to evaluate vehicle models, control systems and procedures using realistic piloted simulation.

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Question - 3:

Tell me about your responsibilities as a spacecraft engineer?

Ans:

Main responsibilities:
* Support existing research and experiment requirements
* Develop solutions aimed at solving problems related to the specific field being studied (vehicle performance, air traffic systems and simulator design)
* Figure things out

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Question - 4:

Please explain that if a craft is orbiting the earth, i.e. the space shuttle and its orbit degrades, is it possible to safely re-enter without compromising the integrity of the craft?

Ans:

In a normal re-entry an entry interface point is selected about 4,000 miles from the landing site. That point is at 400,000 feet and is considered to be at the top of the atmosphere. Since the Shuttle may be orbiting at 200 nautical miles (a nautical mile {NM} is 6080 feet as compared to the miles we are used to which are 5280 feet) its trajectory must be modified to arrive at the entry interface point at the correct angle of descent and of course be at the correct location. If the Shuttle is in an orbit at 200 nautical miles that is equivalent to 1,216,000 feet. The Shuttle fires the Orbiting Maneuvering Engines (OMS) to get on the new orbit that will arrive at the desired entry interface point with the desired conditions.

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Question - 5:

How do you think one can become a professional engineer in the field of spacecraft engineering?

Ans:

The professional engineer requirements are pretty standard across enginering disciplines, as far as I know. Very few aerospace engineers actually bother to become a professional engineer. The reason is that a professional engineer license is required by someone who has to officially approve engineering design specifications, usually someone self-employed or working for a small business. Most aerospace engineers work for big companies or the government and therefore do not need to become professional engineers. The requirements are to pass a Fundamentals of Engineering exam (that takes a grueling four hours), work under a licensed professional engineer for four years (difficult to do in the aerospace field because there are so few professional engineers to work under) and then take a Principles

and Practice of Engineering exam (this one requiring eight hours).

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Question - 6:

Why should we hire you as a spacecraft engineer?

Ans:

One of the best ways to answer this question is to make a short list of all your advantages and create a paragraph that would point out the positive aspects that you would bring to the new job position.

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Question - 7:

What are your biggest strengths as spacecraft engineer?

Ans:

Steps to answer this question:
* Identify which you are good at: knowledge, experience, skills and abilities.
* Prepare a list of your strong points.
* Review the recruitment requirements.

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Question - 8:

Tell me about the testing done in spacecraft engineering?

Ans:

The testing of small rocket engines and entails development by researching on spacecraft. 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 - 9:

What do you think about the future of research in hypersonic flow?

Ans:

The future research in hypersonic flow will be focused on development of better CFD tools and physics-based models to support hypersonic air-breathing and planetary entry vehicle technologies. A combination of ground testing and occasional flight testing will provide opportunities to demonstrate these technologies as well as to validate analysis tools.

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Question - 10:

What did motivate you to get into career in spacecraft engineering?

Ans:

I have always been interested in NASA's space program. A career in aerospace engineering typically begins with curiosity and personal motivation to be involved with aerospace vehicles.

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Question - 11:

Tell me about the operational benefits of hydraulic actuator which is done over gas charged units?

Ans:

Hydraulic units are much better suited to the extreme temperature requirements of aviation applications because they maintain a more constant performance over a wide temperature range.

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Question - 12:

Tell me what are the responsibilities of spacecraft engineering?

Ans:

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

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Question - 13:

Please give me an example of flow control as spacecraft engineer?

Ans:

Example:
An owner using flow control will not buy a machine capable of 1,000 units an hour if supply is only 500 units. Examine systems and determine where lowest flow is experienced then address that point and make sure it operates at full capacity.

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Question - 14:

Tell me what are the disadvantages of being in spacecraft industry?

Ans:

The biggest disadvantage is that it is a relatively small field and the number of companies in the field is getting smaller (lots of mergers between big companies in the news lately).

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Question - 15:

Do you know how to reduce noise as a spacecraft engineer?

Ans:

In order to be able to reduce disturbing noise levels, it is very important to identify two key elements. The first element is the source of the noise. The second is the frequency of the noise. Typically a vibration mount designed in accordance with vibration.

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Question - 16:

Please define coulomb damping in spacecraft engineering?

Ans:

The system is said to have coulomb or dry friction damping if the damping force in a vibratory system is constant and independent of position or velocity of the system.

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Question - 17:

Tell me if wire rope isolator provides the same stiffness in tension and compression in spacecraft engineering?

Ans:

No, the tension stiffness is significantly greater than the compression stiffness. Also, enidine incorporated does not recommend that the wire rope isolator be used in tension stiffness.

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Question - 18:

Can you please tell me the responsibility of the spacecraft operations, dynamics and controls?

Ans:

People working on these areas as spacecraft engineers should have familiarity and exposure to NASTRAN and MATLAB with knowledge on space environment and modeling of flexible dynamics. These spacecraft 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 and operational engineering.

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Question - 19:

Please define excitation frequency in spacecraft engineering?

Ans:

Excitation frequency can be defined as the number of oscillations per unit time that an external force or displacement is applied to a system, can also be referred to as forcing frequency. Typically measured in Hz (cycles per second).

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Question - 20:

Tell me how static electricity affects radomes in spacecraft engineering?

Ans:

Under conditions of low humidity the static electric charge on a radome surface can build up to a very high potential. Severe spark discharging as a result of this condition will create radio interference over a wide band of frequencies. Physical charge may also occur. The electrical discharges chip the paint and often burn small pits or pinholes in the radome. These small surface punctures created by the arcing rapidly increase in size as carbon deposits resulting from the charring encourage further strikes. If this condition is left unchecked, eventual damage to the radome will result from water penetrating through the radome surface into the radome core.

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Question - 21:

Do you know what is performance analysis in spacecraft engineering?

Ans:

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 - 22:

Give me an example of hydraulic unit in spacecraft engineering?

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Ans:

Gas charged air-stair deployment dampers can become too weak in cold temperatures, causing the airstair to slam down into the deployed position. Conversely, they will become overcharged in very hot conditions, causing the door to hover short of the fully deployed position. A hydraulic unit will perform smoothly in both temperature conditions.

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Question - 23:

Please define just-in-time in spacecraft engineering?

Ans:

Just-in-time or lean manufacturing is a production management philosophy built around the continuous reduction of waste. It is suited for businesses where production efficiency is key. Anything that interferes with productivity is waste and, therefore, the enemy under JIT systems. Techniques that support JIT philosophy include reducing inbound inventory by creating supplier delivery schedules, minimizing outbound stock with customer delivery schedules and constant work in-house reducing scrap material and wasted man-hours. These techniques improve cash flow and maximize sales margins.

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Question - 24:

Do you know what is materials requirement planning in spacecraft engineering?

Ans:

A given quantity of finished goods requires a given quantity of raw materials and components to make them. Materials requirement planning systems are computerized tools that manage when materials must be ordered to supply production at a later date. Materials requirement planning is effective when output quantities are known. Small business owners are often their own materials requirement planning systems, storing the information needed to supply production in their knowledge and experience. Activities such as computer tracking inventory and forecasting demand are materials requirement planning activities.

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Question - 25:

Please tell me about flow control in spacecraft engineering?

Ans:

Flow control is also called optimized production technology, focuses on the efficient flow of material through the production process. The philosophy of flow control focuses on bottlenecks. Flow control applies well where maximum productivity is required.

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Question - 26:

Define spacecraft engineering?

Ans:

Spacecraft engineering is the primary branch of engineering concerned with the research, design, development, construction, testing, science and technology of spacecraft.
It is divided into two major and overlapping branches:
* Aeronautical engineering
* Astronautical engineering.

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