1. **Can you describe your experience with electronics packaging design, specifically metal packaging and mechanical enclosure design? Please provide examples of projects you have worked on in this area.**
   1. At my internship at Solar Ship Inc, one of my projects is identifying and procuring a suitable IP65 electronic enclosure required to hold the on-board avionic system. This includes instruments such as airspeed indicator, altimeter, attitude indicator and on-board GPS.

This project required me to utilize my skills in CAD (Solidworks) to model these sensors based on physical measurements and design the placement relative to the enclosure such that they would fit in the tightest space possible without damaging the electrical harness.

Therefore, I am familiar with electronic enclosure design and their respective IP standards.

1. **Have you ever worked on the design and verification of aerospace temperature, flow, and pressure sensors? If so, can you share your experience in performing thermal and mechanical stress analysis for such sensors?**
   1. While I am extremely familiar using, calibrating, and verifying the temperature, flow and pressure sensors from working at my internship as a thermal system intern at Zoox this summer, I do not have experience designing such sensors, but I am very familiar with their internal mechanisms.

From my previous internship at Zoox, I have experience verifying the sensor functionalities as all sensors were bought off-the-shelf from manufacturers such as Omega Engineering and Badger Meter. I actively verified the pressure sensor functionalities before each test by comparing the sensor readings with atmospheric readings and hydrostatic readings from hand calculations.

However, flowmeter and thermocouples are a bit more complicated as they require specialized controlled environments, for which we have to rely on manufacturers’ out-of-house calibration.

As the testing engineer lead at the University of Michigan Rocketry Team, I also gained experience calibrating pressure sensors by relating its output voltage to a known pressure measured from a manometer and ensuring that its voltage vs. pressure measured is a linear line.

1. **Are you familiar with relevant industry specifications such as IEC 751,2, and EIA RS-275 for temperature measurement devices? Can you provide examples of how you've applied these specifications in your previous work?**
   1. I am familiar with IEC 751, which is a set of international standards that are used to quantify the allowable tolerances for industrial *resistance* thermometers, which are then separated into three different classes: Class A, Class B and Class C. Unfortunately, since I have limited experience designing aerospace sensors, I do not have any experience applying such specifications into my previous work. All of my previous work involve using such sensors in various forms of testing.
2. **Do you have experience with test apparatus and methodologies used in functional performance verification? Please describe your experience in this area, including any specific tests you have conducted.**
   1. Unfortunately, I do not have functional performance verification experience with regards to sensors. However, I do have experience conducting such tests for fluid system, for which I will elaborate in the next question.
3. **Have you worked on projects involving flow measurement and flow test instrumentation? If yes, please share your experience and how it relates to the responsibilities of this role in aerospace sensor design.**
   1. Yes, I have worked on several projects involving flow measurement and flow testing.

At Zoox Inc., my primary project is to independently build and operate a test rig that provides flow measurements such as pressure and flowrate within the powertrain and battery cooling system for our L5 autonomous vehicle.

Within a span of 9 weeks, I developed timelines, procured components, and led the project from an empty frame into actively outputting critical flow data for the team. This data includes pressure drops across each thermal component and flowrate through different flow branches with respect to different valve positions and pump duty cycle. I tested 175 different system configurations, extracting experimental data that led to design recommendations capable of potentially improving the system flow rate by 7.5%.

In addition, I also delved into testing automation by devising an automation script in VBS (Visual Basic Script) which automatically changes pump duty cycle and valve positions as a function of time, slashing testing duration for my team from the initial 3 hours down to just 30 minutes.

From this experience, I became extremely familiar with various flow sensors and began to appreciate their internal mechanism and design. I believe my adept experience handling these sensors will help me to excel in the role of aerospace sensor design, as I can apply my knowledge of flow measurement and instrumentation to optimize sensor performance and reliability in aerospace applications. Additionally, my expertise in testing automation will streamline the sensor development process, ensuring accurate and efficient data collection for product improvement.