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**PROJECT ROUND**  
**INFORMATION**

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## **General Instructions**

There are 15 questions for the project round. Choose ONE only to complete. Do note that the requirements for completion are slightly different for each question. The Project Round Infosheet this year is very short. Hence, you are encouraged to read the paper very carefully.

On day 1 of AstroChallenge 2023, you are expected to explain and present in person what you have done. It is mandatory that different teams from the same school must pick different Questions to do.

### **The Exhibition**

The time limit for each presentation is set to 5 minutes. All team members must participate in the presentation as well as the making of the project presentation. Thereafter, Judges may ask questions for up to 3 minutes.

The AC Central Committee will attempt to set up a form for participants to vote on their favourite project exhibition. This voting will only form the basis for the title of the “Most Popular Project Award”. The winner of this Most Popular Project Award will only be announced during Day 2.

### **Pre-Submissions**

Please submit an electronic copy of your poster and other required deliverables (as determined by the question) **by 1200 (Noon) UTC +8, 14<sup>th</sup> May 2023** to [astrochallenge@gmail.com](mailto:astrochallenge@gmail.com). If your poster is handwritten, please submit a photograph of it. If your poster is done in pieces, you are required to submit all of the pieces. I.e. If your poster consists of 4 A4 sized papers, you are required to submit the photos of all 4 pieces of A4 paper. Please make sure that the words on the electronic copy is legible to us.

Late submissions, including submissions for missing parts in the earlier email, will be penalized 20% per day (or part thereof). If you are submitting via a cloud link, your posters and all required deliverables must remain visible to the AC Central Committee up to and until the end of the finals round of AstroChallenge 2023.

While the AC Central Committee will not be grading your poster submitted via email, ensure that the poster submitted via email and the poster you use for the presentation is the same.

You are reminded that the failure to comply with the above instructions regarding pre-submissions may result in heavy penalties up to and including zero-rating of your project round segment.

For the avoidance of doubt, props and other supplementary materials for your presentation other than those stated in the question need not be submitted.

All non-original research or work must be quoted and cited. You are required to submit a list of your citations in a **separate document by the same deadline as the poster**. Failing which may result in zero-rating your project round and/or other disciplinary actions.

**Other Instructions**

You are reminded that the failure to follow any instructions given in this document, written in subsequent emails sent to you and/or verbally on the day of the presentation, can warrant you a discretionary 10% overall penalty per instance or any other penalty prescribed above.

You are reminded that the content of your poster, other materials and presentation must be appropriate.

Please email [astrochallenge@gmail.com](mailto:astrochallenge@gmail.com) for further enquiries regarding any part of this round. If you are unsure of how to proceed with a question, you may email us as well. Generally, the AC Central Committee will help you along and no penalties will be given for emailing.

## **The Questions**

For each of the questions below, you are to produce presentation materials or posters (Maximum combined size A1) explaining one of the following questions to members of the public, including students from secondary schools, polytechnics and junior colleges. Presentations should thus be in an appropriate tone and mode of presentation

1. Introduce an existing or past space station. Explain what it has achieved, or it is planned to achieve in its life time.<sup>1</sup>
2. Explain what are pulsars. What scientific significance do they have?
3. How do we know the size of the Universe?
4. How did the solar system come about?
5. What are the different types of galaxies out there? How are they different in the early universe?
6. What are some of the most interesting exoplanets found? Why are they interesting?
7. Explain the sources of the different colors observed in photographs of nebulae.
8. In preparation for our (hopefully permanent) return to the Moon, your space agency has tasked you to propose landing sites for future scientific missions far and beyond. What are your key priorities in selecting a site? Hence, explain the key benefits of your proposed site(s) to the public.<sup>2</sup>
9. Introduce and explain to the public an existing Hubble Space Telescope image. Explain its scientific significance. Include a link to the photo you have chosen.<sup>3</sup>
10. What is planetary protection? Discuss its significance and some of the protocols involved.
11. Explain what the Fermi Paradox is.
12. What are some of the surface features of the Moon? How are they formed? Can they be captured using your phone camera?<sup>4</sup>
13. Introduce your school's astronomy club or equivalent to students of other schools.<sup>5</sup>
14. How can we tell our geographical position by using just the Sun or the stars? If possible, demonstrate using field data collected and determine the coordinates of a position of your choice.<sup>6</sup>
15. Give a night sky tour. What are some of the constellations visible in Singapore? Can they be taken by a typical camera?<sup>7</sup>

If your question has a superscripted number at the end, refer to the footnote on the next page.

### **Footnotes for Questions**

- 1: You are encouraged to explore beyond the International Space Station. However, you are not precluded from introducing the International Space Station.
- 2: Do not reuse prior or planned landing sites on the moon for past, existing or upcoming missions.
- 3: Your photo can be from anywhere on the internet as long as it is taken by the HST. If you are lost, you may want to try: <https://esahubble.org/images/> .
- 4: You are required to take a few Moon photos to reference your answer to. You are required to submit these photos as well.
- 5: You are required to produce campaign materials in addition to a poster and submit them as well.
- 6: Submit a google maps pin to the location chosen along with any field data collected.
- 7: Include with your submission, photos of the night sky that you have tried to take in Singapore along with the date, time and location of the shot as well as the specifications of your camera.

### Guiding Rubrics:

Note that the AC Central Committee reserves the right to change any of the weightages or otherwise with or without prior notice should the AC Central Committee deem it prudent to do so at any time.

<b>Criterion</b>	<b>Weightage</b>	<b>Approaching Expectations 0 - 3</b>	<b>Meeting Expectations 4 - 7</b>	<b>Exceeding Expectations 8 - 10</b>
Accuracy and Depth of content (Includes Q&A)	40%	Content of the presentation is inaccurate with grave conceptual error; content fails to go beyond the superficial or is plagiarized from source materials. Narrow scope with limited variety of concepts and ideas.  Unable to answer most, if not all, questions satisfactorily.	Content of the presentation is somewhat accurate with few factual errors; Analysis of topic is limited or paraphrased from source materials, with a fair variety of concepts and ideas.  Unable to answer quite a number of questions satisfactorily.	Content of the presentation is largely accurate with negligible factual error; Analysis of content boasts originality with an excellent presentation portraying a large variety of concepts and ideas.  All requirements of the question are, in addition, met.  Able to answer most questions satisfactorily.
Communication	15%	Viewers of the presentation are unfortunately unable to comprehend or the presentation was substantially a re-reading of the poster	Participants speak clearly and intelligibly most of the time; engages viewers to a certain degree.	Participants speak clearly and fluently throughout at a suitable pace; deeply engages viewers.
Poster Clarity	15%	Viewers of the poster are unable to understand what the intent or the topic is about.	The poster is generally clear to viewers of the poster. However, parts of the poster are confusing.	The poster is extremely clear to viewers of the poster.

<p>Creativity and Originality</p>	<p>20%</p>	<p>Method of presentation is overused or cliché or the presentation did not make reference to any poster and/or other materials or the presentation was substantially a re-reading of the poster.</p>	<p>Method of presentation is refreshing but uninspiring or the presentation did not make reference to all relevant materials and/or the poster.</p>	<p>Method of presentation is novel and innovative and all relevant materials along with the poster were included in the presentation.</p>
<p>Teamwork</p>	<p>10%</p>	<p>The judges wonder where all the other members of the team had gone...</p>	<p>Only some members are actively involved in the making of the project or there is disproportion in work allocation amongst members.</p>	<p>All members are actively and fairly involved in the project and the presentation.</p>

## **Guidelines for good posters and presentations**

The following are merely guidelines and hence optional for you to follow. However, here are a few tips which the AC Central Committee has summarized from our experience with posters.

### **How to start**

1. Begin with the end in mind. Design your presentation with the aim of telling your audience something.
2. Choose a few questions you find interesting and research widely to get an idea of the content needed for each of the questions. Ask yourself if you both understand and feel confident explaining these content.
3. Try to define hard words at the start or when they are introduced. This will make it much easier to follow. This would include astronomy terms which may be common to you.
4. Ensure fair use of copyrighted resources. To put simply, avoid lifting substantial chunks wholesale from whatever materials you find online even if it's Copylefted or has a Creative Commons License.
5. You may want to do a presentation among your friends to gauge their understanding and/or interest. This will also help you eliminate blind spots in your presentation.
6. Note well that you are expected to provide credits for all resources used, including for your own team members. As stated above in the requirements, this will need to be part of a separate document.
7. If you are completely lost, you can read the rubrics to get an idea of what we are looking for.

### **Project Poster**

1. Write the question number and question itself on the poster itself.
2. Ensure that the words are readable at a distance of 1,5m away. Additionally, ensure that the colors you pick for the words and/or the background should aid in the readability of your poster.
3. Use easy to understand vocabulary.
4. A picture speaks a thousand words. Pictures or graphics are always preferable to long walls of text.
5. Do not squeeze everything into your poster. The poster is not the only avenue to explain concepts. You may present using props or verbally as well.
6. Do not rush out your poster. Hastily submitted posters generally are of very low quality.
7. Ensure that your poster can hold the attention of your audience. You may want to be concise and reduce the use of statistics.

### **The Presentation**

1. Dress appropriately for the presentation.
2. Rehearse a few times to ensure smooth delivery.
3. You should make good use of your props, data and the poster during your presentation.
4. You are encouraged to look deeper and do much more research than what appears in your presentation. This will prepare you for the questions you may be asked.
5. You should be familiar with your material before presentation.