



AstroChallenge 2022 Observation Round (Practical) (Cleaned)

School/Team:

Team Members:

Examiner:

PLEASE READ THESE INSTRUCTIONS CAREFULLY

1. This paper consists of **8** printed pages, including this cover page.
2. You have **until 2200h** to attempt all the questions in this paper.
3. At the end of the paper, submit this booklet to your QM.
4. It's your team's responsibility to ensure all pages have been submitted.
5. It's your team's responsibility to ensure all instructions are read and understood before the start of the Practical Round.

1. Setup and Scope Handling [20%]

In this section, you are required to set up a telescope as a group. This section is graded by negative marking. You are given **100 pts** at the start, and every error during setup and handling will result in a deduction. Assessment ends when the telescope is fully set up, the finder is aligned, and the telescope is pointed at an object. All members of the group must participate in this activity. Note that the total score for this section will be normalized according to its weightage for mark tabulation purposes.

Note to Candidates:

1. All accepted defects (I.e. faulty parts of the setup which do not impact its usability) shall be explained clearly to your assessor immediately before setup.
2. If the assessor agrees with your claim, no points shall be deducted.
3. If the assessor deems your setup to be deficient, in consultation with the rubrics, he may deduct points or award zero points for this section.
4. Your assessor has the prerogative to add criteria to which he may deduct marks.

For examiners: If any deductions were made at all, write your explanation below.

| Marking Rubrics | |
|---|-------------------|
| OTA & Mount Model/Specs: | |
| Minor Mistakes (-3) | Tick |
| Eyepieces/Optical elements improperly packed/stored | |
| Mount not placed on a fairly level surface (For Dobsonians) | |
| Leaving eyepieces exposed without dust caps | |
| Screws/Bolts of mount/base not secured tightly | |
| Lids of boxes/containers are not closed | |
| Errors (-5) | Tick |
| Bearing disks are not properly placed in to elevation bearings (For Dobsonians) | |
| Placing telescope on mount before counterweights are loaded (For Equatorials) | |
| Tripod is not leveled (For Equatorials/Alt-Az) | |
| Mount not aligned to the North (For Equatorials) | |
| Finder is improperly secured to OTA | |
| Finder is improperly aligned | |
| Major Errors (-10) | Tick |
| Did not bring any eyepieces | |
| Touching optical elements in eyepieces with bare hands | |
| Dropping/Stepping on eyepieces/mount head | |
| Kicking/Tripping over setup/telescope/boxes | |
| Not holding on to telescope when locking knobs are unsecured | |
| Telescope is severely imbalanced | |
| OTA is improperly secured to the dovetail clamp | |
| Major safety breaches | |
| Immediate Zero | Tick |
| OTA is dropped | |
| Unable to set up telescope at all | |
| Setup unsafe/unable to be used | |
| Multiple Deductions (-5) | Occurrence |
| Assistance or directions required from QM in scope set-up | |

For Examiner Use only:

| Name | Sign | Total Score |
|-------------|-------------|--------------------|
| | | /100 |

2. Cosmic Bingo [40%]

Instructions

There are 4 rows and 5 columns in the following chart. Each team member will pick a different row and write their initials beside it.

All observation targets in a row can only be found by the member who selected it. Other team members may provide verbal assistance, laser guiding, etc. However, they are not allowed to touch the optical tube – doing so will disqualify that target and remove it from the grid.

The first 2 columns require boresighting. Here, boresighting is defined as the aiming of a telescope by aligning the OTA body with a target without looking through the eyepiece. Physical landmarks on the OTA body may be used to aid alignment (e.g. screws, brackets, ridges), however the use of aiming devices such finderscopes and laser viewfinders (e.g. TELRADs) are strictly forbidden. Participants are not allowed to look through the eyepiece to 'check' their answers.

For targets in the other three columns, the participant is free to use the eyepiece, finderscopes, aiming devices, as well as star charts (physical or digital), internet resources or personal notes and references to aid in the finding.

Scoring

Upon finding the stipulated object, inform the examiner, who will verify by checking the eyepiece. If verified, the QM will mark it off the bingo grid. Each cell in the grid is worth **10 pts**. For each completed row or column, **5 pts** will be awarded. If the entire grid is completed, a bonus **5 pts** will be awarded. Note that the total score for this section will be normalized according to its weightage for mark tabulation purposes.

| Mark Breakdown | |
|------------------|--------------------------------------|
| Object | 10 x 20 = 200 |
| Row/Column Bonus | 5 x (5 columns + 4 rows) = 45 |
| Completion Bonus | 5 |
| Total | 200 +45 +5 = 250 |

| | | | |
|---------------------|--|-----------------|--|
| Name of Team | | | |
| Examiner(s) | | | |
| Start Time | | End Time | |

| Your Initials | Bright Boresight | Other Boresight | Visual Doubles and Multiple-Star Systems | DSO I | DSO II |
|----------------------|------------------|-----------------|--|-------|--------|
| No. of Objects Found | | | | | |
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For Examiner Use only:

| Object Score | Row Bonus | Column Bonus | Completion Bonus |
|--------------|-----------|--------------|------------------|
| | | | |

| Name | Sign | Total Score: |
|------|------|--------------|
| | | /250 |

3. Stellar Marathon [40%]

In the following section, you are required to find as many visible objects as possible. The marks will be allocated as follows:

- a. Visual doubles and multiple star systems (5 pts)
- b. Open clusters (12 pts)
- c. Globular clusters (15 pts)
- d. Galaxies (18 pts)
- e. Nebulae (18 pts)
- f. Galaxy clusters (22 pts)
- g. Comets (25 pts)

For credit to be awarded, the object must be visually detectable in the eyepiece. No credit is awarded for correct location of objects which are too dim to be visible under local sky conditions. Participants must also be able to name and explain the classification of the object shown (as per above guidelines) for credit to be awarded.

There will be no 'double-marking' of objects; i.e. at any time in one field-of-view, if two objects are visible within the same field-of-view, only one selected object will be credited as a find, and any other visible objects will not receive any credit, even if 'found' subsequently on a separate occasion. Participants are advised to select the appropriate field-of-view before showing the object to the examiner for checking.

Note that objects listed in the table for Section 2. Cosmic Bingo will not be credited if found again for this section.

You can consult any references such as physical/digital star atlases, internet resources or any personal notes or references to assist with finding objects. However you are not allowed to communicate with other teams or any third parties for assistance.

There is no maximum score for this section. All scores would be scaled against the highest score amongst all participating teams for tabulation of marks.

| S/N | Object | Time Observed | Classification | Score Awarded | Countersign |
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| 42 | | | | | |

For Examiner Use only:

| Name | Sign | Total Score: |
|------|------|--------------|
| | | |