AstroChallenge 2025
Senior Observation Round
Cloudy Weather Programme

Friday 6th June 2025

PLEASE READ THESE INSTRUCTIONS CAREFULLY.

1. This paper consists of **8** printed pages, including this cover page.
2. Follow the instructions within the paper.
3. The maximum cap for the Observation Team shall be set at 5 persons. In other words, up to 5 persons may form the Observation Team.
4. You are reminded about the paramount importance of safety during the Observation Round.

School and Team Number	
Team Member 1	
Team Member 2	
Team Member 3	
Team Member 4	
Team Member 5	

The Observation Round has three sections: Section A, Section B and Section C.
You are required to complete all three sections.

Section A 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 points 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, or a penalty may apply.

The weightage of this section is 20%.

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 with reference to the rubrics, points may be deducted.
4. **You are reminded of the paramount importance of safety.** You should take every precaution to ensure the safety and well-being of yourself and others around. Committing any act that compromises anyone's safety in any way would result in immediate disqualification and those involved shall be held liable for any responsibility according to law.

Marking Sheet

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 onto elevation bearings (For Dobsonians)	
Placing telescope on mount before counterweights are loaded (For Equatorials)	
Tripod is not levelled (For Equatorial/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 (–3)	Occurrences
Assistance required from assessor in scope set-up	

For assessors: Write any explanations for deductions made here:

FOR ASSESSOR USE ONLY
Name:
Sign:
Score: /100

[Turn over]

Section B Observation Technique (40%)

Instructions

This section will require you to use your telescope to "boresight" different terrestrial targets.

Throughout the round, you are not allowed to communicate with other teams or any third parties for assistance.

Target Table

The Target Table contains 5 rows and 2 columns. Each team member would pick a different row and write their initials beside it.

In this section, solo effort is required. All observation targets in a row can only be found by the member who selected it. Other team members may provide any form of assistance, but they are not allowed to touch the optical tube – doing so will disqualify that target and any further attempts to find the target would be nullified. When switching between team members, the telescope should be reset to a neutral position, as deemed appropriate by the assessor.

For every target, the respective team member must use the "boresighting" techniques to find it. Details are elaborated below.

Boresighting

"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 (eg. screws, brackets, ridges), however, the use of aiming devices such as finderscopes and laser viewfinders (eg. TELRADs) are not allowed. Participants are not allowed to look through the eyepiece or finderscopes to "check" their answers. Upon finding the stipulated object, inform the assessor, who will then verify by checking the eyepiece.

For targets in the first column of the table, participants can try as many times as necessary, subject to the time constraint of the section. If the assessor deems that the target is not inside the field of view, the telescope will be returned to the neutral position as deemed by the assessor. If the assessor has verified that the target is in the field of view, the target will be marked off the Table, and the credit awarded.

For targets in the second column of the table, only one attempt at boresighting is allowed. To attempt the targets in this column, participants will first declare to the assessor that they are attempting the target. They will then get exactly one try to boresight, following all rules applicable to boresighting. Once they are confident that the object is found, they will inform the assessor, who will verify by checking the eyepiece. If verified, the assessor will mark it off with credit awarded, and if the assessor deem that the target is not found, it will not be available for any further attempts.

Safety

You are reminded of the paramount importance of safety.

In general, laser pointers are not allowed in this section, since all targets are terrestrial.

This is not an exhaustive list of safety hazards and participants should take every precaution to ensure the safety and well-being of themselves and others around.

Committing any act that compromises anyone's safety in any way would result in immediate disqualification and participants shall be held liable for any responsibility according to law.

Scoring

For the first column of the table, each target successfully found will give 10 marks. For the second column of the table, each target successfully found will give 20 marks.

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

Target Table

Team Name			
Assessor			
Start time		End time	

Your Initials	Terrestrial Target (Boresight)	Terrestrial Target (Boresight, one attempt only)	Score
	Target 1	Target 1	
	Target 2	Target 2	
	Target 3	Target 3	
	Target 4	Target 4	
	Target 5	Target 5	

FOR ASSESSOR USE ONLY

Name	Sign	Total Score

Section C Stellarium Marathon (40%)

Instructions

This section will be done on Stellarium, with the live location and time set to 2100hrs.

You will be working as a team, and you have a total of 15 minutes for this section.

You are required to find as many visible objects as possible on Stellarium. Only objects with a well-recognised common name, or inside the Messier or Caldwell catalogue are allowed.

Each member of your team must at least identify one object. Only verbal assistance would be allowed throughout the process. Only one member would be allowed to touch the laptop/computer at any one time. Violating this rule would result in warning for first time, and severe penalty of score (10% each time) for any subsequent times.

Appropriate penalty will be applied if any team members fail to identify at least one object. (eg. if one member in a team of five did not identify any object at all, the whole team score would receive a 20% penalty)

The marks will be allocated as follows:

Type of object	**Credit**	**Remark**
Bright star with common names	+5	
Open Clusters	+15	Note the "no double counting" rule, especially for clusters that may also exhibit nebulosity
Nebulae	+15	
Globular Clusters	+20	
Galaxies	+25	
Comets	+30	

For credit to be awarded, the object must be zoomed in and pointed out. 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, 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 assessor for checking.

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.

You will need to write the initials of your name on the last page before the start of the round. This is to help with the assessor in score accounting.

Stellar Marathon Record Sheet

S/N	Object	Time	Classification	Score	Countersign
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					

S/N	Object	Time	Classification	Score	Countersign
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
41					
42					
43					
44					

FOR ASSESSOR USE ONLY

Participant name initial					
One object found					
Countersign					

Name	Sign	Total Score
		/100