



ASTROCHALLENGE 2018 OBSERVATION ROUND (THEORY)

5 June 2018

SOLUTIONS (Teams A and B)

School:

Team members:

PLEASE READ THESE INSTRUCTIONS CAREFULLY

1. This paper consists of **10** printed pages, including this cover page.
2. Do **NOT** turn over this page until instructed to do so.
3. You have **1 hour** to attempt all questions in this paper.
4. At the end of the paper, submit this booklet.
5. It is your team's responsibility to ensure that all pages have been submitted.

Part I	Part II	Part III	Part IV
/ 60	/ 60	/ 15	/ 30

Part I: Constellation Identification (60 points, average)

Identify and link **one complete constellation** in each image. For one constellation, name any 2 bright stars. Also identify two deep sky objects (or double stars) in the image that are visually observable with a small telescope (or apparent in a short 30s exposure). These objects do not have to be within the complete constellation identified earlier.

Q1:



Q2:



Q3:



Q4:



Part II: Night Sky Identification (60 points, average)

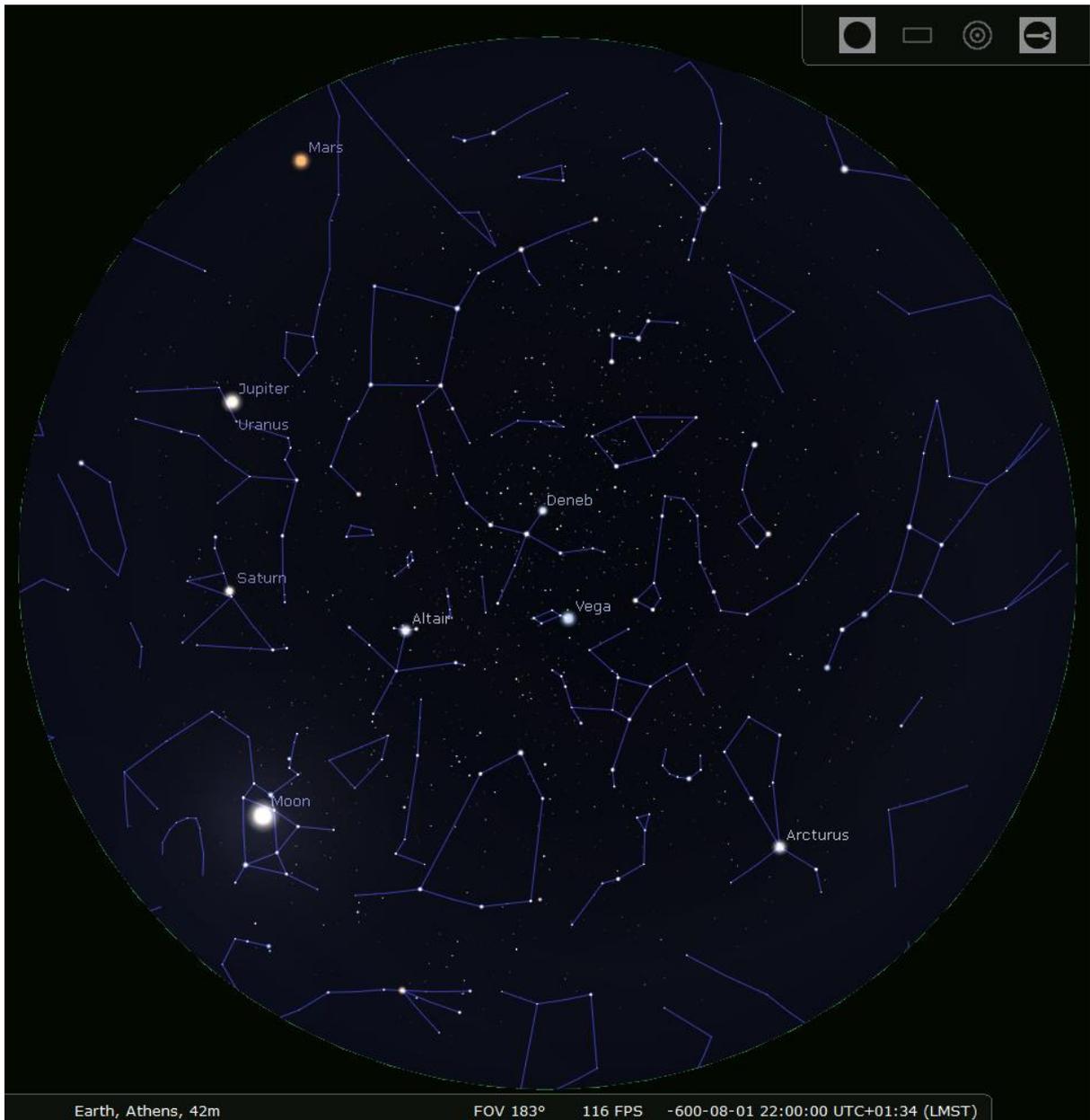
There is a total of 2 questions. Each question is worth 30 points. You are to identify as many constellations – name, shape and their alpha star, deep sky objects, bright stars with common names, planets, (if any) you can possibly find in each question / diagram. Note that top scores for each section will be rescaled to full credit. Keep your sketches **neat and tidy** as no points will be awarded if your workings are illegible and cannot be deciphered.

1. Deep-sky object (DSO) (4 point per correct name and location)
2. Constellation name and shape (up to 3 points) (maximum 10 constellations)
3. Common asterism (2 points)
4. Planet (2 points) [no need to identify the planet]
5. Bright star (1 point)

Q1:



Q2:



Part III: Finding Charts (15 points per team)

Equipment provided:

- 50mm finder (7° FOV, 2x magnification)
- Altitude-azimuth mount
- C6 telescope (150mm diameter, 1500mm focal length)
- Eyepieces 32mm EP (TFOV = 1.17°)

Team A:

You are to prepare a finding chart for the object of interest, Uranus, starting from Antares. Indicate your school and team on the finding chart.

Team B will NOT know the object of interest. They will locate the object of interest in ocular view with the aid of the finding chart prepared.

Team B:

Within the **next 5 minutes**, locate the object of interest in ocular view with the aid of the finding chart prepared by Team A. You do not need to identify it. A time penalty of 15 seconds would be imposed if help is needed to slew back to the original position.

Points will be given for how well the finding chart was prepared and the accuracy in locating the object of interest.



1P/Halley, S 69°, E 54°, 2061-12-25, 02:30:00

Team A: Part IV: Spring-Summer Sky Navigation (30 points per team)

At 12 midnight tonight, the sky clears up. Within the **next 5 minutes**, find as many objects as you can.

Objects must be easily seen with a small telescope. Each object in the list below found will be granted 3 points. Each additional object not in this list will be granted 1 point.

The Find function and all labels/markings are disabled. You may only use the arrow directional controls and PgUp/PgDn to zoom in/out.

1. Cooling Tower (M29)
2. Ptolemy Cluster (M7)
3. Eagle Nebula (M16)
4. Arcturus
5. False Comet (C76)
6. M22
7. M4
8. M3
9. Ring Nebula (M57)
10. Coathanger (Collinder 399)
11. Pinwheel Galaxy (M101)
12. Wishing Well Cluster (C91)
13. Great Cluster in Hercules (M13)
14. Centaurus A (C77)
15. Omega Nebula (M17)

Singapore, 2018-06-06, 00:00:00

Team B: Part IV: Lost in Spacetime (30 points per team)

You are exposed to a view of the night sky at an unknown place and time. Within the **next 5 minutes**, find as many objects as you can.

Objects must be easily seen with a small telescope. Each object will be granted points as follows:

1. Deep-sky object (DSO) (4 point per correct name and location)
2. Constellation name and shape (up to 3 points) (maximum 10 constellations)
3. Common asterism (2 points)
4. Bright star (1 point)

Note that top scores for this section will be rescaled to full credit.

The Find function and all labels/markings are disabled. You can only use the arrow directional controls and PgUp/PgDn to zoom in/out.

Neptune (N 1°, E 104°), 2018-06-01, 18:00:00