

Israel Open Astronomy Olympiad 2025

Junior and Senior age group problems

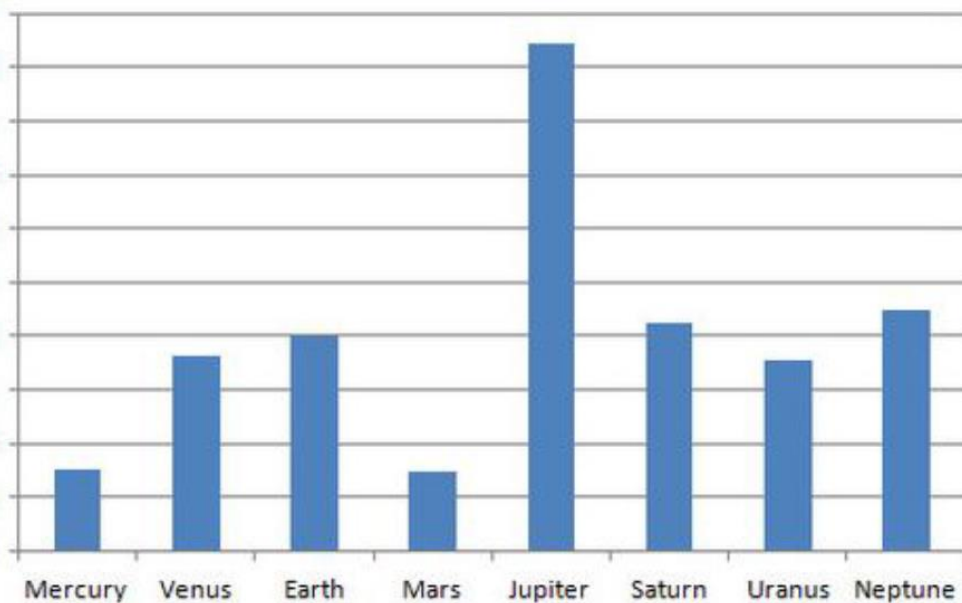
Quiz (20 p.)

20 questions, 1 point for each correct answer.

1. Which of these stars is never visible from Israel?
 - A. Antares
 - B. Altair
 - C. Algol
 - D. Acrux

2. Which of these Jupiter satellites is not a Galilean moon?
 - A. Amalthea
 - B. Io
 - C. Ganymede
 - D. Callisto

3. What is seen on the diagram below?
 - A. Sizes of the planets
 - B. Masses of the planets
 - C. Free fall accelerations near surface of the planets
 - D. Number of known satellites



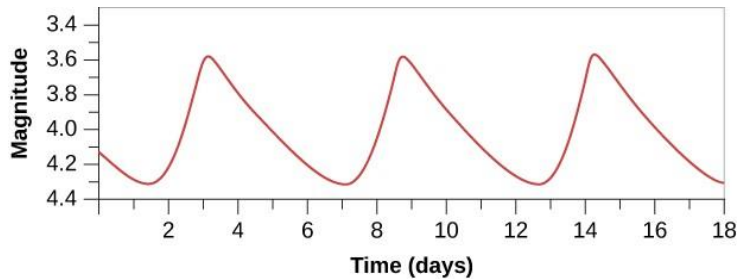
4. **During the year, the Sun passes through thirteen constellations. Which of the constellations below is in this list?**
- A. Aquila (Aql, Eagle)
 - B. Gemini (Gem, Twins)
 - C. Ursa Major (UMa, Big Dipper)
 - D. Ursa Minor (UMi, Small Dipper)
5. **Which of these object types has the highest visible surface temperature?**
- A. Brown dwarfs
 - B. Yellow main sequence stars
 - C. Red giants
 - D. Hot Jupiters
6. **Which of these planets will be visible tonight in the sky by a naked eye? (multiple choice)**
- A. Mercury
 - B. Venus
 - C. Mars
 - D. Jupiter
 - E. Saturn

Note: +0.25p for the correct answer, -0.25p for each incorrect answer.

7. **Imagine there is a human base on the Moon. How long roughly it will take the moon inhabitants to send a message to the Earth and get an instant receipt confirmation?**
- A. About 2.5 milliseconds
 - B. About 2.5 seconds
 - C. About 2.5 minutes
 - D. About 2.5 hours
8. **There are several minor planets (asteroids) with names related to Israel. Which of the Israeli universities has an asteroid named in honor of it?**
- A. Technion – Israel Institute of Technology
 - B. Ben-Gurion University of the Negev
 - C. Tel Aviv University
 - D. The Hebrew University of Jerusalem

9. What is seen on the graph below?

- A.** Changes of the variable star brightness
- B.** Changes of the variable star temperature
- C.** Changes of the variable star size
- D.** Changes of the variable star surface gravity



10. An observer in Israel went out to see the starry sky at midnight and saw a culmination of the brightest night sky star within an hour. When this could have happened?

- A.** In September
- B.** In December
- C.** In March
- D.** In June

11. The Moon was rising during the sunset on January 01. Where did the Moon rise?

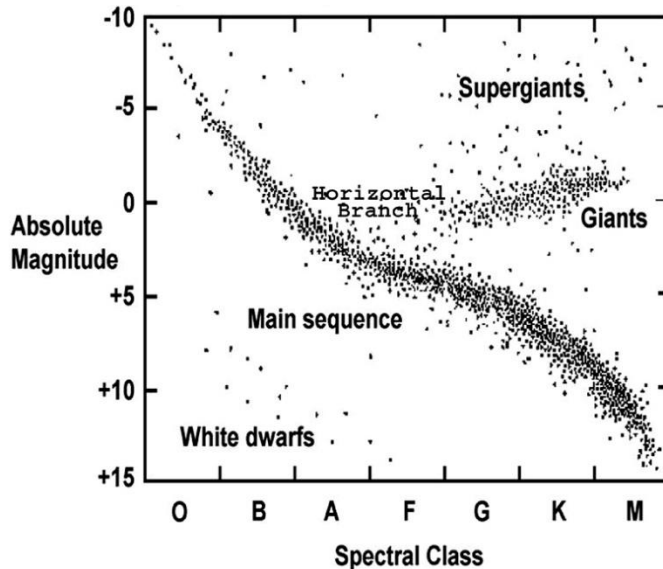
- A.** Directly in the East point
- B.** To the south from the East point
- C.** To the north from the East point
- D.** Directly in the West point
- E.** To the south from the West point
- F.** To the north from the West point
- G.** Cannot be determined from this information

12. Why are the stars not seen during the daytime?

- A.** The stars do not shine during the daytime
- B.** Atmosphere is not transparent for the light of stars during the daytime
- C.** The sunlight scatters in air and makes the sky too bright to notice stars
- D.** Stars are easily seen during the daytime, if you know where to look at

13. What **cannot** be determined from the graph below if the star position on it is known?

- A. Brightness class of the star
- B. Absolute magnitude of the star
- C. Distance of the star from the Sun (*)
- D. Size of the star



14. The meteor showers are named after constellations where their radiant lies. Which of these meteor showers is named after a constellation that is not currently recognized?

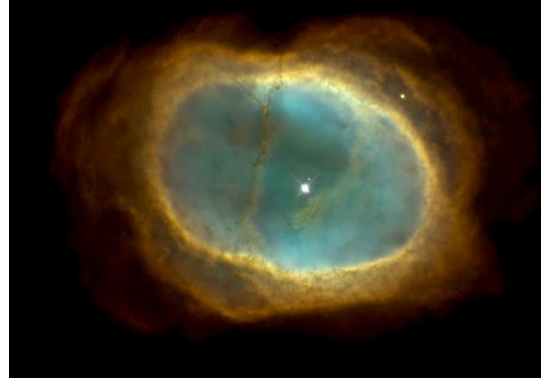
- A. Quadrantids
- B. Perseids
- C. Leonids
- D. Eta-Aquarids

15. Which of the following is true for all these objects: Andromeda nebula, Pleiades, Orion nebula, Crab nebula?

- A. They were all known in the time of David and Solomon
- B. They are all emission nebulae
- C. They are all included in the Messier catalogue
- D. Each of the contains multiple stars

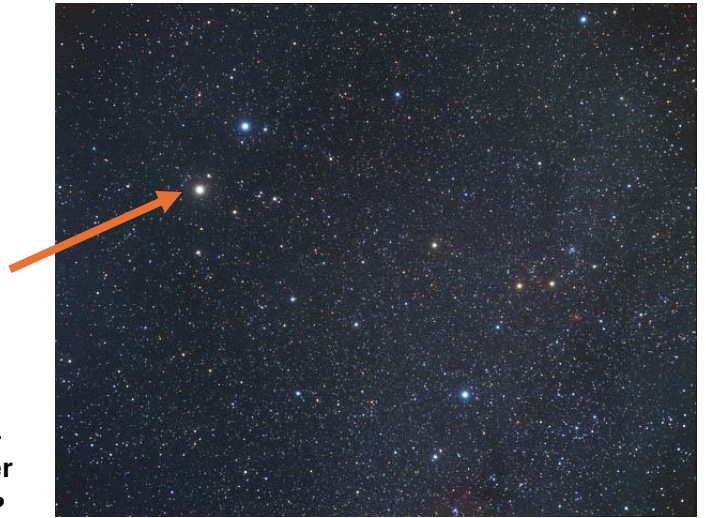
16. What is this?

- A. A protoplanetary disk
- B. A galaxy
- C. A stellar cluster
- D. A planetary nebula



17. The photo below shows one of the Zodiac constellations. What is the name of the star showed by an arrow?

- A. Betelgeuse
- B. Pollux
- C. Polaris
- D. Mizar



18. The first known interstellar comet 2I/Borisov was discovered in August 2019 and passed through the central part of the Solar system in December 2019. What was its trajectory shape?

- A. Circular
- B. Elliptical
- C. Nearly parabolic
- D. Hyperbolic

19. Which of these planets has the largest number of natural satellites as discovered up to now?

- A. Jupiter
- B. Saturn
- C. Uranus
- D. Neptune

20. The Moon sets two hours after the sunset. What is its phase?

- A. Waxing Crescent Moon
- B. Full Moon
- C. Waning Gibbous Moon
- D. Cannot be determined from this information