

# Solar System B Answer Key

Science Olympiad North Regional Tournament at the  
University of Florida



## Part 1

1.
  - a. Mercury
  - b.
    - i. Crust
    - ii. Mantle
    - iii. Core
2. Venus
- 3.
4.
  - a. Mars
  - b. Hellas or Hellas Planitia or Hellas Impact Basin
4.
  - a. It rotates in the opposite direction that it orbits the Sun.
  - b. It may be attributed to a collision with a large body early in Venus's evolution.
5.
  - i. doras
  - ii. highlands
  - iii. mountains
  - iv. plains
  - v. craters
  - vi. pyroclastic deposits
  - vii. vents
  - viii. hollows
6. It lost its less dense outer layers to a violent collision with another body or by intense interactions with the proto-Sun early in its evolution.
7.
  - a. Kirkwood Gaps
  - b. Mars and Jupiter
8.
  - a.
    - i. M-Type
    - ii. C-Type
    - iii. S-Type
  - b.
    - i. M-Type      Iron and Nickel, Outer (towards Mars) regions of the asteroid belt.
    - ii. C-Type      Rich in Carbon, Outer (towards Jupiter) regions of the asteroid belt.
    - iii. S-Type Silicates, Inner (between Mars & Jupiter) regions of the asteroid belt
9. They're caused by thermal expansions and contractions as the moon rotates and continues to cool internally, as well as from tidal stresses caused by Earth.
10.
  - i. Caloris Basin

- ii. Mercury
- 11. Iron
- 12.
  - i. Iron
  - ii. Silicon
- 13. It rotates 3 times for every 2 times it orbits the Sun.
- 14. Carbon Dioxide primarily comprises the Venetian atmosphere.
- 15.
  - i. The Moon
  - ii. Tycho
- 16. Both moons did not condense in orbit around Mars and were in fact captured from the asteroid belt later in the solar system's history.
- 17. Volcanoes and Craters
- 18. The moon was created when a large body collided with Earth, breaking off a significant amount of material that then coalesced in orbit around Earth.
- 19.
  - i. Orbit of Mercury
  - ii. Orbit of Mars
  - iii. Asteroid Belt
  - iv. Amor Asteroids
  - v. Trojan Asteroids
  - vi. Orbit of Earth
  - vii. Orbit of Jupiter
  - viii. Apollo Asteroids
  - ix. Trojan Asteroids
  - x. Orbit of Venus
  - xi. Aten Asteroids
- 20. Plot of orbits of known potential hazardous asteroids

## Part 2

- 21.
  - a. L

- b. M
  - c. K
22. 2.54 A
23. 6.08 AU
- 24.
- a. The body produces new surface material quickly.
  - b. Io, because It has over 400 active volcanoes.
- 25.
- a. Origins Spectral Interpretation Resource Identification Security - Regolith Explorer
  - b. The OSIRIS-REx spacecraft will travel to a near-Earth asteroid, named Bennu (formerly 1999 RQ36), and bring at least a 2.1-ounce sample back to Earth for study.