

Physics 1305 (Solar System Astronomy)

Exam 3, Sample Questions

Dr. Andersen

There may be **more than one** correct answer to each question or there may be **NO** correct answers. Mark all correct answers on the answer sheet. You will be graded **RIGHT MINUS WRONG**, answer by answer, **not** question by question! (i.e., You will receive one point for each **correct answer marked** and have one **subtracted** from your score for each **incorrect answer marked**. You will receive neither penalty nor bonus for any answer left blank.) **DO NOT GUESS!!!!**

1) Jupiter's moon Io:

- A) Shows signs of liquid water on its surface.
- B) Is geologically active today due to tidal squeezing by Jupiter.
- C) Shows a high density of impact craters on its surface.
- D) Has signs of active volcanism.

2) The photosphere of the Sun:

- A) Is the hottest observable layer of the Sun.
- B) Is the layer of the Sun from which most of the Sun's light comes.
- C) Is the layer of the Sun where sunspots are observed.
- D) Is the layer above the chromosphere.

3) The Kirkwood gaps in the asteroid belt are created by the same physical mechanism as which of the following?

- A) The narrow rings of Jupiter, Uranus, and Neptune.
- B) The geological activity of the moon Europa.
- C) The Cassini division and other gaps in the rings of Saturn.
- D) The Trojan point asteroids of Jupiter.

4) Carbonaceous meteorites:

- A) Are composed largely of Iron and Nickel.
- B) Have been processed relatively little since the formation of the solar system.
- C) Contain volatile compounds such as water.
- D) Are the remnants of a planet that exploded.

5) Comets:

- A) Have a single tail.
- B) Represent planetesimals formed in the outer parts of the solar system.
- C) Probably formed well after the rest of the solar system did.
- D) Are composed exclusively of different types of ices.

6) The "little ice age" that occurred during the 1600's:

- A) corresponded to a period when there were few sunspots observed on the surface of the Sun.
- B) Was a time during which average temperatures were one to two degrees higher than normal.
- C) Indicates that the total amount of energy being put out by the Sun may be correlated with the level of magnetic activity on the Sun.
- D) Was due to a lack of greenhouse gases in the Earth's atmosphere during that time.

7) The Oort cloud:

- A) Is where all comets originate.
- B) Extends well beyond the orbit of Pluto.
- C) Is roughly spherical in shape.
- D) Was created by gas giant planets gravitationally flinging comets into larger orbits.

8) The planet Saturn:

- A) Has an atmosphere composed largely of Hydrogen and Helium.
- B) Has the same density as Jupiter.
- C) Has a more simple atmospheric circulation pattern than Jupiter.
- D) Probably has a core similar to that of Jupiter.

9) The rings of Saturn:

- A) Show no small scale structure.
- B) Are composed largely of ice particles.
- C) Show gaps that are associated with orbital resonance's with different moons of Saturn.
- D) Are brighter seen from the opposite side of the Sun, compared to when seen with the Sun at your back.

10) The Asteroid belt:

- A) Contains all the asteroids in the solar system.
- B) Contains gaps that are due to orbital resonance's with Jupiter.
- C) Is the left over remains of an exploded planet.
- D) Is the likely source for most of the meteorites that fall on the Earth.

11) Short period comets:

- A) Take the same amount of time to orbit the Sun as long period comets.
- B) Seem to originate in the same portion of the solar system as long period comets.
- C) Tend to orbit in the solar system in the same direction as the planets.
- D) Have orbital planes that are similar to those of the planets.

12) Which of the following are useful for giving us information about the state of material in the solar system 4.5 billion years ago?

- A) Comets
- B) Carbonaceous meteorites
- C) The oldest known Earth rocks
- D) The oldest Moon rocks