

### Midterm Test 2

Circle the letter next to your choice of answer for each multiple-choice question (do not write the letter next to the question).

(1) What are asteroids?

- a. Small chunks of rock and dust scattered around the solar system.
- b. Rocky objects, smaller than planets but often larger than buildings.
- c. Fragments of star material that come to Earth from outer space.
- d. Tiny fragments of ice scattered around the solar system.

(2) What is the main difference between refracting and reflecting telescopes?

- a. In reflecting telescopes the images produced are inverted, in refracting ones they are not.
- b. Refracting telescopes focus light with lenses, reflecting telescopes use mirrors.
- c. Refracting telescopes are fixed and housed inside domes, reflecting ones are movable.
- d. In reflecting telescopes some of the light is reflected away, refracting ones collect all of it.

(3) Which of these does Neptune most resemble, in terms of appearance and size?

- a. Venus.
- b. Jupiter.
- c. Uranus.
- d. Pluto.

(4) What is an astronomical unit?

- a. The time for the Earth to go around the Sun once.
- b. The distance between the Earth and the Sun.
- c. The distance between the Earth and the Moon.
- d. The amount of energy the Sun produces every second.

(5) Why don't we have regular photographs of the surface of Venus taken by orbiting spacecraft?

- a. Because the spacecraft move too fast to take good pictures.
- b. Because Venus is always totally covered by thick clouds.
- c. Because that close to the Sun all pictures are overexposed.
- d. Because no spacecraft has yet flown close enough to Venus.

(6) Why aren't Mars' moons round like our Moon?

- a. Because they are too small for gravity to make them round.
- b. Because the pull from Mars' gravity prevents them from being round.
- c. Because there are two of them, whereas we only have one.
- d. Because of collisions they have suffered.

(7) What was the Tunguska event?

- a. The impact of a large asteroid that killed the dinosaurs 65 million years ago.
- b. One of the brightest meteor showers in recorded history, which happened in 1833.
- c. The largest gathering of meteor watchers ever, that drew a crowd of 40,000 people.
- d. A comet or asteroid that reached Earth in 1908, flattening a large area in Siberia.

(8) Compared to a reflecting telescope with a smaller primary mirror, one with a larger mirror has

- a. Better angular resolution only.
- b. Better light-gathering power only.
- c. Better light-gathering power but poorer resolution.
- d. Better light-gathering power and better resolution.

(9) Which of these planets is most similar to Earth in size?

- a. Jupiter.
- b. Mars.
- c. Venus.
- d. Mercury.

(10) Were the asteroids in the asteroid belt part of a planet in the past?

- a. Yes, asteroids were formed by the collision of two large planets.
- b. Yes, asteroids were formed when a planet between Mars and Jupiter broke up.
- c. No, Jupiter's presence prevented them from joining to form a planet.
- d. No, asteroids originally came from different parts of the solar system.

(11) When was Mercury discovered?

- a. Mercury can be seen with the naked eye, so it was known since prehistory.
- b. In the early 1600s, with the invention of the telescope.
- c. Around 1850.
- d. In 1912.

(12) Which of the following has a surface that most resembles that of Mercury?

- a. The Moon.
- b. Mars.
- c. Venus.
- d. Earth.

(13) Does the Moon rotate?

- a. No, that is why we always see the same side of the Moon.
- b. Yes, it makes one full rotation every day, like the Earth.
- c. Yes, once a month, at the same rate at which it orbits us.
- d. Yes, once a year, it always keeps the same side facing the Sun.

(14) Around what year were telescopes first used in astronomy?

- a. 3000 BC.
- b. 300 BC.
- c. The early 1600s.
- d. Around 1920.

(15) Approximately how large is the Moon?

- a. About the same size as Earth (6500 km radius).
- b. One fourth the size of the Earth (1700 km radius).
- c. About 4% of the size of the Earth (260 km radius).
- d. 1/400 the size of the Earth (17 km radius).

(16) How far is Venus from the Sun?

- a. About 0.7 AU.
- b. About 7 AU.
- c. About 70 AU.
- d. About 700 AU.

(17) Is there, or has there been, water on Mars?

- a. No, Mars has always been a totally dry planet.
- b. There used to be, but what remains of it is probably all frozen.
- c. Until recently there wasn't, but we can now see lakes starting to form.
- d. Yes, Mars is the only other solar planet where we can see liquid water.

(18) What is the main reason the Hubble Space Telescope gives great images?

- a. It is outside the Earth's atmosphere.
- b. It has the largest mirror ever built.
- c. It is closer to the stars than Earth-bound telescopes.
- d. It has the most sophisticated instruments currently in use.

(19) How often do space rocks weighing a few lbs or more arrive to Earth?

- a. Normally, we get some every day.
- b. Many times in the past, but now only once or twice a year.
- c. We only have evidence for a total of 30 or so having arrived.
- d. We have no evidence of any having arrived.

(20) What is Ceres?

- a. The largest known asteroid in the Solar System.
- b. One of Mars' moons, the smallest of any planet in the Solar System.
- c. One of the Kuiper Belt objects larger than Pluto.
- d. One of Jupiter's moons, the largest of any planet in the Solar System.

(21) The tail of a comet points

- a. Backwards, in the direction the comet is coming from.
- b. Forwards, in the direction the comet is headed towards.
- c. Away from the Sun, because it is pushed away by the solar wind.
- d. Toward the Sun, because it is attracted by the Sun's gravity.

(22) How does Jupiter compare in radius with the terrestrial planets?

- a. It is larger than Mars, but smaller than Venus.
- b. It is more than ten times the size of any of them.
- c. It is more than 1000 times the size of any of them.
- d. It is smaller than any of the terrestrial planets.

(23) In what sense is Uranus' moon Miranda strange?

- a. It makes a full rotation every two seconds.
- b. It seems to have been broken up and reassembled.
- c. It has a thicker atmosphere than that of any planet.
- d. It is the only moon known to have a little moon of its own.

(24) How many planets are recognized as part of the Solar System?

- a. 8.
- b. 9.
- c. 10.
- d. 11.

(25) What is interesting about Jupiter's moon Europa?

- a. The probable existence of water below its icy surface.
- b. A very large chunk of its surface is missing, possibly from a collision.
- c. It is the fastest spinning moon in the solar system.
- d. The active volcanoes on its surface.

(26) Why do certain meteor showers occur around the same date every year?

- a. Because meteor showers depend on the phase the Moon is in.
- b. Because those are the times when there are more stars in the sky.
- c. Because the Earth goes through the same trail of comet debris along its orbit.
- d. Because the atmosphere needs to be at the right temperature.

(27) What does Jupiter look like?

- a. A rocky ball with volcanic and meteorite craters.
- b. A smooth ice ball with cracks caused by internal activity.
- c. An orange-brown gas ball with cloud bands and turbulence patterns.
- d. A blue-green gas ball with a few weather patterns and dark spots.

(28) What is the main difference between comets and asteroids?

- a. An asteroid is called a comet if it develops a tail.
- b. Comets shine because they emit light, asteroids don't.
- c. Asteroids are made of rocky material, comets are icy.
- d. Comets sometimes come near the Earth, asteroids don't.

(29) What are Saturn's rings made of?

- a. A thin, shiny sheet of liquid water surrounding the planet.
- b. A smooth, spinning solid disk of dust-covered rocky material.
- c. A hot plasma of ionized gas inside a strong magnetic field.
- d. A large number of icy particles and chunks of various sizes.

(30) Which planets have spacecraft from Earth landed on?

- a. Venus and Mars.
- b. All of them.
- c. None of them (just the Moon).
- d. Mars.

(31) Why don't we have any good, clear pictures of Pluto's surface?

- a. Because no spacecraft from Earth has been near it yet.
- b. Because it is always covered by a thick cloud layer.
- c. Because it is too dark out there for our cameras to take pictures.
- d. Because the camera on the orbiting spacecraft is damaged.

(32) What is the Cassini division?

- a. A famous 1920s debate on the nature of Saturn's rings.
- b. The gap between the A and B rings of Saturn.
- c. A large crack in Saturn's moon Titan.
- d. A wide, dark cloud belt on the surface of Saturn.

(33) Rather than a planet, Pluto is now considered as one of the larger objects in the

- a. Kuiper Belt.
- b. Roche Lobe.
- c. Oort Cloud.
- d. Asteroid Belt.

(34) Why does Uranus appear bluer than Jupiter and Saturn?

- a. The blue color is just a false color added to the photographs.
- b. Because its surface is frozen solid and covered by ice.
- c. Because it is colder and its atmosphere contains more methane.
- d. Because its surface is totally covered by a liquid ocean.

(35) Do we have spacecraft currently sending data from Mars, either on the surface or in orbit around it?

- a. No, but NASA and ESA are planning several future missions.
- b. Not yet, but one mission is on its way and will reach Mars soon.
- c. Yes, we have spacecraft both in orbit around Mars and on the surface.
- d. Yes, in fact we have three astronauts exploring Mars and building a base.

(36) How many moons does Saturn have?

- a. None, they were all crushed into the rings.
- b. Four: Titan, Mimas, Rhea and Enceladus.
- c. 60 known ones, almost as many as Jupiter.
- d. 90 known ones, more than any other planet.

(37) When was Neptune discovered?

- a. In the II century AD, Ptolemy saw it and wrote about it in his book "The Almagest".
- b. In the 1500s, by Tycho Brahe during his careful planet observations.
- c. In the 1840s, from predictions based on peculiarities of Uranus' motion.
- d. Neptune is easily seen with the naked eye, so it was known since prehistory.

(38) Which ones of these objects are likely to come from the Kuiper belt?

- a. Asteroids.
- b. Meteorites.
- c. Comets.
- d. Auroras.

(39) According to the leading theory, how was the Moon formed?

- a. Something the size of a small planet collided violently with the Earth.
- b. The Moon used to be another planet, and it was captured by the Earth's gravity.
- c. The Earth and the Moon formed side by side at about the same time.
- d. The Earth was spinning fast, broke into two pieces, and one became the Moon.

(40) What is the main difference between Terrestrial planets and Jovian ones?

- a. Terrestrial ones have moons, Jovian ones don't but have rings instead.
- b. Jovian ones orbit the Sun in the opposite direction to Terrestrial ones.
- c. Terrestrial ones are smaller and rocky, Jovian ones larger and gaseous.
- d. Terrestrial ones were all formed at the same time, Jovian ones were captured later.