

Name _____

Do not forget to write your name and fill in the bubbles with your student number, **leaving the last bubble blank**, and fill in test form A on the answer sheet. Write your name above as well. You have 55 minutes. For each question, mark the best answer. There are no formulas for this test.

1. Which of the following objects has never been visited by any space probe?
 - A) Pluto (only)
 - B) Neptune (only)
 - C) Mercury (only)
 - D) All of the above have not been visited
 - E) All of the above have been visited
2. What is unusual and unexplained about Uranus' and Neptune's magnetic fields?
 - A) They have two north poles, instead of a north pole and a south pole
 - B) They are exceptionally strong, even stronger than Jupiter's
 - C) They are produced in liquid helium layers
 - D) They fluctuate constantly
 - E) They are tilted at a strange angle and not centered on the planets
3. Which of the following do Eris and Pluto probably have in common?
 - A) They are both round (only)
 - B) They are both icy on the outside (only)
 - C) They are both members of the Kuiper belt (only)
 - D) All of the above are true
 - E) None of the above are true
4. How old, approximately, are the oldest meteorites ever discovered?
 - A) 4.6 million years
 - B) 27 million years
 - C) 460 million years
 - D) 4.6 billion years
 - E) 27 billion years
5. What is believed to be responsible for very narrow rings, like Saturn's F-ring?
 - A) Strong magnetic fields, that guide the pieces into these narrow regions
 - B) The planet's strong gravity, which tells them how far away to be from the planet
 - C) A pair of shepherd moons, whose gravitational influence keeps them narrow
 - D) Light pressure from the Sun, opposed to heat from the planet, pushing them into this narrow region
 - E) Gravitational attraction among the particles of the rings, which pull them together

6. Comet Halley is currently very far from the Sun. The only part of it that probably currently exists is the
A) Dust tail B) Ion tail C) Nucleus D) Coma E) Streamers
7. What is the temperature on Mercury like?
A) Uniformly very hot
B) Everywhere is hotter than Earth, but some places are much hotter than others
C) Some places hotter than Earth, some places colder than Earth
D) Everywhere is colder than Earth, but some places are much colder than others
E) Uniformly very cold
8. Which of the following objects is believed to have no (or very little) ice (or water)?
A) Jupiter B) Saturn C) Triton D) Io E) Uranus
9. Which of the following objects has a significant atmosphere?
A) Mercury B) Io C) Ganymede D) Europa E) Titan
10. Where can the largest mountain (extinct volcano) in the solar system be found?
A) Earth B) Mars C) Io D) Jupiter E) Miranda
11. Venus has some craters, but very few. From this we can conclude that Venus
A) Has a old surface
B) Has a young surface
C) Has a lot of water erosion
D) Has very little water erosion
E) Has a very high temperature
12. Which gas has a large greenhouse effect here on Earth?
A) Carbon dioxide
B) Carbon monoxide
C) Sulfuric acid
D) Nitrogen
E) Oxygen
13. What is the cause of the flattening of Saturn, so that it doesn't look exactly round?
A) Saturn's rapid rotation
B) The gravitational pull of the rings on the planet
C) The magnetic field of Saturn
D) The pull of gravity from nearby objects like Jupiter
E) Rising gasses from the interior distorting the shape

14. Which of the following makes Earth different from any other known planet or moon in the solar system?
- A) It is the only object with much nitrogen in its atmosphere
 - B) It is the only object with clouds in the atmosphere
 - C) It is the only object with a noticeable greenhouse effect
 - D) It is the only object with liquid water on the surface
 - E) It is the only object which we are sure has active volcanoes on its surface
15. Which planet is the next planet out after Saturn?
- A) Jupiter
 - B) Uranus
 - C) Neptune
 - D) Venus
 - E) Mars
16. Why are all of the planets of the solar system orbiting the Sun in about the same plane?
- A) They formed from a single rotating protoplanetary disk
 - B) The Sun's gravity pulls them steadily into a plane from whatever orbit they started in
 - C) The Sun's magnetic field pushes them around in this plane as the Sun rotates
 - D) Dust obscures our view outside of this plane
 - E) Asteroids destroy any objects that don't lie in this plane
17. Where is the largest storm that has ever been observed in the solar system?
- A) Earth
 - B) Mars
 - C) Jupiter
 - D) Neptune
 - E) Titan
18. What is the largest object in the solar system, besides the Sun?
- A) Jupiter
 - B) Neptune
 - C) Earth
 - D) Uranus
 - E) Ceres
19. Which of the following objects has at least one ring?
- A) Venus
 - B) Neptune
 - C) Mars
 - D) Mercury
 - E) None of them has a ring
20. What is believed to be responsible for the striped appearance of Jupiter?
- A) Rising and falling layers of gas with clouds at different temperatures and colors
 - B) Gravitational influence of Jupiter's huge moons, scarring the surface
 - C) Differential shading caused by the shadow of the inner planets
 - D) Different layers of rock/ice/gas, sliced through and turned on its side
 - E) Stripes painted on the planet using Sherwin-WilliamsTM paint
21. How many known moons does Uranus have?
- A) 0
 - B) 1
 - C) 2
 - D) 3
 - E) 4 or more

22. Our best guess about how Earth's Moon formed is that
- A) It is a Kuiper belt object that lost its ice
 - B) It formed from several captured asteroids
 - C) It was formed from volcanoes on Earth
 - D) It was ejected from the Sun
 - E) It was formed when a large object collided with the early Earth
23. On which of the following two objects have dunes been seen?
- A) Mars and the Moon
 - B) Titan and the Moon
 - C) Titan and Mars
 - D) Mars and Venus
 - E) Titan and Venus
24. Which planet has polar caps?
- A) Mercury
 - B) Jupiter
 - C) Saturn
 - D) Mars
 - E) Venus
25. A planet or moon is most likely to have an atmosphere if it has a
- A) High mass and high temperature
 - B) High mass and low temperature
 - C) Low mass and high temperature
 - D) Low mass and low temperature
 - E) Mass and temperature have little to do with whether something has an atmosphere
26. Ceres is a
- A) Kuiper Belt object
 - B) Oort Cloud object
 - C) Moon
 - D) Meteorite
 - E) Asteroid
27. Which of the following is not currently part of the definition of a planet?
- A) It must be pulled by gravity into a round shape
 - B) It must be larger than any moon of any other planet
 - C) It must orbit a star
 - D) It must be significantly more massive than anything in a nearby orbit
 - E) Actually, all of these are part of the definition of a planet
28. Which of the following is not a recognized type of meteorite?
- A) Iron
 - B) Stony
 - C) Stony-Iron
 - D) Icy
 - E) Chondrite

For each of the following, please look at the pictures on the screen to identify the object.

29. What is this a picture of?

- A) Moon B) Mercury C) Mars D) Iapetus E) Ganymede

30. What is this a picture of?

- A) Titan B) Venus C) Miranda D) Uranus E) Jupiter

31. What is this a picture of?

- A) Earth B) Io C) Europa D) Triton E) Jupiter

32. What is this a picture of?

- A) Triton B) Moon C) Ganymede D) Europa E) Miranda

33. What is this a picture of?

- A) Mars B) Mercury C) Jupiter D) Saturn E) Neptune