

Name (Printed) _____

Signature _____

Student Number _____

Seat Number _____

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- 1 Considering how a planet's velocity changes along its orbit, the fastest speed will occur at which point in the orbit?
 A WRONG! speed does not change along an orbit
 B aphelium
 C perihelion
 D halfway between perihelion and aphelion
- 2 Newton's picture of a high mountain, with cannons shot away from it, was used to explain how what works?
 A eclipses
 B Earth's seasons
 C precession
 D moon phases
 E orbits
- 3 If the gravitational force between the Earth and moon were suddenly turned off, what would happen to the moon?
 A orbit Earth half as fast
 B move off into space in a straight line
 C fall onto the Earth
 D nothing at all
 E orbit Earth twice as fast
- 4 Why do satellites have to get a few hundred miles high to be in orbit?
 A magnetic field is stronger that high
 B magnetic field is weaker that high
 C get above friction of our atmosphere
 D Earth's gravity is much weaker that high
 E gravitational field is stronger that high
- 5 The biggest terrestrial planet is
 A Mars
 B Earth
 C the sun
 D Venus
 E Jupiter
- 6 Where are most asteroids usually found?
 A between Mercury and sun
 B between Mars and Jupiter
 C between Mars and Earth
 D beyond orbit of Neptune
 E between Earth and Venus
- 7 We have used spacecraft to visit other stars and their solar systems
 A true
 B false
- 8 What would happen to a rocket moving above the Earth's atmosphere, with a speed smaller than the orbital velocity?
 A fly off into space
 B fall to the ground
 C orbit the Earth with eccentric orbit
 D orbit the Earth with circular orbit
- 9 It took astronauts 3 days to get to the moon. At that rate how long would it take to go across the diameter of the sun?
 A 2 years
 B 2 hours
 C 2 weeks
 D 2 months
 E 2 days
- 10 In 13,000 years which of the following will still be true despite precession? (Remember that our calendar is continuously corrected for precession).
 A the sun is in Aquarius on the vernal equinox
 B August is summer time in the northern hemisphere
 C Polaris will still be our North Star
 D the constellation Orion is visible in winter
- 11 Which planet has an orbit which is very eccentric, tilted with respect to the rest of the solar system, and actually crosses the orbit of another planet?
 A Pluto
 B Mercury
 C Venus
 D Saturn
 E Mars
- 12 Many thousands of years ago, ancient peoples made a major effort to build accurate calendars because
 A they wanted to know what caused the phases of the moon
 B they wanted to know their sun sign
 C their religions required this
 D they needed to get the growing seasons right
 E they worshiped the sun
- 13 Our summer now occurs when the Earth is farthest from the sun, and when the North pole points towards the sun. Because of precession, in 13,000 years summer will occur during which of the following times?
 A only near full moon
 B only near new moon
 C when N pole points away from sun
 D when Earth farthest from sun
 E when Earth closest to sun

- 14 The month of March does not occur in the same part of the Earth's orbit every year because of which of the following, which happens over thousands of years?
 A the Earth's orbit changes from year to year
 B tides
 C continental drift
 D the oceans change the rotation of the Earth
 E precession
- 15 Your sun sign in astrology is the constellation of the ____ containing the sun on the day you were born.
 A Jovian
 B Solar signs
 C Precessional
 D Milky Way
 E Zodiac
- 16 Ancient peoples knew the planets were special because they
 A covered up the sun in solar eclipses
 B passed in front of the moon at times
 C moved around on the sky
 D controlled the Earth's weather
 E were far brighter than the brightest star
- 17 Which of the following lengths of time do we get from the moon?
 A hour
 B minute
 C year
 D day
 E month
- 18 The point of the Earth's orbit where it is farthest from the sun is called the
 A apogee
 B perigee
 C aphelion
 D perihelion
 E Troland
- 19 The sun sign for March 1 now is not the same as the sun sign was 2000 years ago because ____.
 A stars drift through space, changing constellations
 B of continental drift
 C of precession of Earth's poles
 D of changes in the Earth's orbit
 E the calendar was changed in 1900
- 20 How does the spacing between the orbits of the terrestrial planets compare with the spacing between the orbits of the Jovian planets?
 A terrestrial planets much farther apart than Jovian
 B terrestrial planets much closer together than Jovian
 C spacing between terrestrial and Jovian planets the same
- 21 Astronomers have known the masses of all planets with the following property for hundreds of years. Those without this property have had their masses measured only in the space age.
 A observed to collide with asteroid
 B close to sun
 C rapid rotation
 D one or more moons
 E close to Earth
- 22 What season is it in Kentucky when the Earth is closest to the sun?
 A we are always the same distance from the sun
 B summer
 C fall
 D spring
 E winter
- 23 The laws of physics say that when a spacecraft goes to another planet, when it arrives it is moving ____ velocity.
 A faster than escape
 B slower than escape
 C faster than precessional
 D slower than orbital
 E slower than precessional
- 24 If the Earth's rotation axis were tilted by 90 degrees relative to the sun so that there were times when the poles pointed straight at the sun, how would the seasons be different from the way they are now?
 A they would be far extreme
 B there would be no seasons
 C they would be the same as they are now
- 25 Which of the following is a constellation on the zodiac today, but is not a sun sign in astrology?
 A Little Dipper
 B Big Dipper
 C Gemini
 D Orion
 E Ophiuchus
- 26 The shape of an orbit is determined by which law?
 A Kepler's second
 B Newton's second
 C Kepler's third
 D Kepler's first
 E Newton's first
- 27 Over a year the sun appears to move around the sky on a path called the
 A solstice
 B ecliptic
 C precession
 D perihelion
 E nutation

- 28 Ancient people knew that planets were special, and many thought they were magic, because:
 A they do not twinkle
 B they are bright
 C they move around the sky
 D they have strange colors
 E they have moons
- 29 The time it takes for a planet to complete one orbit around the Sun is called its
 A radius
 B maximum elongation
 C hyperbolic sidereal
 D period
 E epicycle
- 30 On a scale where the Earth is a basketball, the whole solar system is roughly the size of
 A Kentucky
 B the distance from the Earth to the moon
 C 30 feet
 D 2 inches
 E Lexington
- 31 Planets of the solar system tend to
 A have the same radius
 B have the same length day
 C have the same mass
 D orbit in the same plane
 E have the same length year
- 32 Which of the following are like mountains of rock, ten miles across?
 A comets
 B asteroids
 C Terrestrial planets
 D meteors
 E Jovian planets
- 33 Our spacecraft have visited other star systems to explore their planets.
 A false
 B true
- 34 When different cultures viewed the same constellation, they almost always came up with the same animals or objects.
 A false
 B true
- 35 If the calendar were not corrected for precession, which of the following would always be true over the 26,000 year period?
 A June 21 always an equinox
 B summer always when Earth closest to sun
 C June 21 always when Earth farthest from sun
 D June 21 would occur at different seasons
 E June 21 always a solstice
- 36 We can measure the mass of any planet with a moon using the following law.
 A Troland's first law
 B the laws of Galilean motion
 C Bode-Titius relationship
 D Newton's second law
 E Kepler's third law
- 37 Which of the following has the greatest affect on the Earth's climate?
 A cosmic rays from sun
 B heat from deep inside the Earth
 C heat and light from the sun
 D Earth's magnetic field
 E volcanoes
- 38 The dates associated with sun signs today are not the same as in Babylonian times because of
 A changes in the length of the day
 B changes in the length of the year
 C precession
 D changes in the constellations
 E nutation
- 39 Which type of planet is Pluto thought to be?
 A Kryptonian Planet
 B a star like the sun
 C Terrestrial planet
 D a very large comet
 E Jovian planet
- 40 The sun appears to move through the constellations of the Zodiac because of
 A the moon's motion around the Earth
 B the Earth's motion around the sun
 C the sun's motion around the galaxy
 D Kepler's third law
 E the precession of the Earth
- 41 The Age of Aquarius began 30 years ago when the sun sign on the vernal equinox changed from Pisces to Aquarius due to
 A changes in the orbit of the Earth
 B changes in the moon's orbit
 C changes in the constellations
 D changes in the number of days in a year
 E precession
- 42 If the speed of an object or the direction in which it moves changes, then what must be going on?
 A the expansion of the Universe
 B forces are present
 C there is no gravity affecting it
 D the Bode-Titius Rule
 E Kepler's laws

- 43 When a planet is close to the sun in an elliptical orbit, its orbital speed is ___ when it is further away.
A slower than
B the same as
C faster than
- 44 Precession causes which of the following to change?
A our north star
B Jupiter's orbit around sun
C continental drift
D length of our year
E length of the month
- 45 How does the tilt of the Earth's rotation axis change over one year, with respect to the rest of the universe?
A very little
B changes to always point towards the sun
C is constantly perpendicular to the orbital plane
D precesses around in a full circle
E changes to always point towards the moon
- 46 If you take a picture of the nighttime sky by holding the shutter of a camera open for several hours, stars make long streaks. This is caused by
A rotation of the Earth
B Earth's orbit around the sun
C moon's orbit around the Earth
D sun's orbit around the galaxy
E stars' motions across the galaxy
- 47 A body that is held together by its gravity will always .
..
A be close to the sun
B have a strong magnetic field
C spin very slowly
D be round like a ball
E spin very fast
- 48 Mercury and Venus do not have any moons. Their masses could only be measured in which century?
A 16th
B 18th
C 20th
D 19th
E 17th
- 49 The length of the month is most related to the motion of
A the Earth around the sun
B the spin of the sun on its axis
C the sun around the galaxy
D the spin of the Earth on its axis
E the moon around the Earth
- 50 Which of the following most directly measures how much matter is in something?
A density
B thickness
C diameter
D weight
E mass
- >>>
>>>Did you put 101101 in Special Codes?
>>>

Special Codes= 101101

1	00000	1
1	0 0	1
1	0 0	1
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1	00000	1

Answer Sheet:

Ast 191-1 Test 1 Dr. Ferland,

Fall 2004

1 c	2 e	3 b	4 c	5 b	6 b	7 b	8 b	9 c	10 b
11 a	12 d	13 e	14 e	15 e	16 c	17 e	18 c	19 c	20 b
21 d	22 e	23 a	24 a	25 e	26 d	27 b	28 c	29 d	30 a
31 d	32 b	33 a	34 a	35 d	36 e	37 c	38 c	39 d	40 b
41 e	42 b	43 c	44 a	45 a	46 a	47 d	48 c	49 e	50 e

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- 1 As seen by someone on the moon, how does the position of the Earth in the sky change over a lunar day?
 A moves from east to west once per year
 B stays in same place in sky all the time
 C moves from west to east once per year
 D moves from west to east once per day
 E moves from east to west once per day
- 2 Geologists could not find a buried meteorite inside the Barringer Crater. Why?
 A it was stone, so was overlooked
 B it exploded in the air
 C it sank deep into the Earth
 D it was ice, and melted
 E the buried meteorite eroded away
- 3 The phases of the moon have a direct influence on which of these?
 A birth rates
 B none
 C mental illness
 D menstrual cycle
 E criminal activity
- 4 Most of the moons of Jupiter have a density near 1. This means that these moons must be largely composed of
 A iron
 B rocks
 C air
 D lead
 E water ice
- 5 Solar eclipses always occur at
 A aphelion of Earth's orbit
 B full moon
 C vernal equinox
 D new moon
 E Jan 23
- 6 This is an international project designed to discover objects that might hit the Earth.
 A Ballistic Missile Warning System
 B Safeguard Survey
 C Impactor Defense Survey
 D Air Force Logistics Lab
 E Asteroid Comet Survey
- 7 Which is one source of the Earth's internal heat?
 A rapid rotation of core
 B large pressure
 C radioactive decays
 D the Earth has no source of heat
 E tidal effects
- 8 Plate tectonics is another name for which of the following?
 A pressure in the inner core
 B formation of the Earth's atmosphere
 C isostasy
 D continental drift
 E convection in the outer core
- 9 The mass extinctions in the KT catastrophe were most severe in which part of the Earth?
 A North America
 B Antarctica
 C Australia
 D Africa
 E Europe
- 10 The moon has lots of impact craters a few miles across while the Earth has few. Why?
 A moon hit more often than Earth
 B craters on Earth have eroded away
 C Earth's magnetic field deflects meteors
 D moon rocks more brittle, form craters easier
 E no big meteorites can get through Earth's atmosphere
- 11 Liquid rock deep in the Earth is called
 A magma
 B diamond
 C coal
 D limestone
 E shale
- 12 Where is the crater created during the KT catastrophe?
 A Antarctica
 B East Coast of North America
 C Northern Africa
 D west coast of South America
 E coast off Yucatan
- 13 When the Earth melted what happened to most of the dense metals like gold or platinum?
 A caught in rocks near surface
 B evaporated into space
 C sank to center of Earth
 D caught in rocks in mantle
 E floated to top
- 14 The Moon Illusion involves the moon's
 A size near the horizon
 B tidal pull on Earth
 C shape near new moon
 D rotation period
 E magnetic field

- 15 Wind and water erosion create which type of rocks?
 A igneous
 B magma
 C sedimentary
 D lava
 E precessional
- 16 The moon has a far side, that is never visible from the Earth. This happens because of which of the following properties of the moon?
 A moon has eccentric orbit around Earth
 B moon has no atmosphere
 C moon does not rotate
 D moon rotates once per orbit of Earth
 E moon's orbit is tilted with respect to solar system
- 17 A gibbous moon can occur between which two phases?
 A there is no moon phase called gibbous
 B first quarter and full
 C last quarter and new
 D new and first quarter
- 18 Why did the Earth's climate change for several decades after the KT catastrophe?
 A Earth's orbit changed
 B tidal wave covered all the continents with water
 C dust thrown up into atmosphere by impact blocked sunlight
 D Earth's spinning on its axis changed
 E Earth's rotation axis tilt changed
- 19 Which of the following pose the greatest impact danger for the Earth?
 A all the same danger
 B other terrestrial planets
 C asteroids
 D comets
 E Jovian planets
- 20 Meteorites usually explode violently when they strike the Earth or moon. What is the source of their great energy that causes the explosion?
 A their low orbital speed
 B their high density
 C their great kinetic energy
 D their low density
 E they are composed of dense material like uranium
- 21 Heat flowing through the asthenosphere of the Earth causes convection. This is what causes the following to happen on the Earth's surface.
 A magnetic fields
 B gravitational fields
 C impact cratering
 D continental drift
 E polar ice caps
- 22 Why is the quarter moon called that?
 A quarter of moon's surface visible
 B moon quarter way to full
 C moon sets at quarter past 6PM
 D quarter of moon's surface not visible
 E happens when quarter way through lunar month
- 23 How do the tidal bulges on the Earth affect the orbit of our moon? They cause the moon to have ...
 A larger orbit, shorter period
 B smaller orbit, longer period
 C larger orbit, longer period
 D smaller orbit, shorter period
- 24 The meteorite passed around in class came from
 A a comet
 B the surface of the moon
 C a planet that tried to form between Earth and Venus
 D a planet that tried to form between Mars and Jupiter
 E the center of the Earth
- 25 The meteor that created the Barringer Meteor crater was composed mainly of ____.
 A rocks
 B uranium
 C iron
 D ice
 E air
- 26 Which part of the Earth is broken into plates?
 A asthenosphere
 B lithosphere
 C crustalsphere
 D outer core
 E mantle
- 27 The mass extinctions during the KT catastrophe were most severe in this part of the Earth.
 A Antarctica
 B North America
 C Africa
 D Europe
 E Australia
- 28 If a moon is closer to a planet than the Roche limit it could be destroyed by
 A the planet's polar caps
 B tidal forces
 C heat of the planet
 D the planet's magnetic field
 E heat of the sun

- 29 You can tell whether a planet has hot flowing liquid metals deep inside by measuring which of the following?
 A length of its year
 B depth of its oceans
 C number of moons it has
 D length of its day
 E magnetic field
- 30 Which of the following will be true when the Earth reaches complete synchronous rotation with the moon billions of years from now?
 A our length of our day will be much shorter
 B Earth keeps same side pointed to sun
 C moon will escape into intergalactic space
 D our month (time between new moons) will be much shorter
 E Earth keeps same side pointed to moon
- 31 The study of seismic waves tells us that ____.
 A granite is denser than basalt
 B the Earth is a permanent magnetic
 C the outer core of the Earth is liquid
 D the mantle is liquid
 E the Earth is 4.5 billion years old
- 32 The length of the Earth's day is slowly increasing because of
 A magnetic pull of sun
 B friction with Earth's atmosphere
 C ocean currents pushing on continents
 D magnetic pull of moon
 E friction with tidal bulges
- 33 When the Earth is between the moon and sun what phase does the moon have?
 A first quarter
 B full
 C crescent
 D new
 E last quarter
- 34 Which has the greater mass, a 1 kg loaf of bread, or a 1 kg piece of lead?
 A lead
 B impossible to determine
 C both the same
 D bread
- 35 In ancient times the first day of the month happened when
 A crescent moon barely visible
 B time of lunar eclipse
 C moon's first quarter phase
 D moon's last quarter phase
 E moon's full phase
- 36 What does the moon look like in the middle of a lunar eclipse, when it is in the shadow of the Earth?
 A very red color
 B like normal full moon, bright white circle of light
 C like normal first quarter moon
 D completely invisible
 E bright blue color
- 37 Iron in the Earth's outer core is a liquid, but the inner core is solid despite having a higher temperature. Which of the following is the reason why the inner core is solid?
 A it has a low magnetic field
 B it has a very high pressure
 C it has less dense material
 D it has a high magnetic field
 E it has a very low pressure
- 38 The moon can be thought of as having a "heavy" side and a "light" side. Which side is the "heavy" side?
 A side pointed towards Earth
 B side pointed away from Earth
 C south pole
 D north pole
- 39 Which of the following measures how tightly packed together something is?
 A weight
 B density
 C color
 D mass
- 40 Which of the following types of eclipse is common, since half the people of the Earth can view it?
 A lunar
 B stellar
 C precessional
 D convective
 E solar
- 41 When you look at an impact crater, the shape and size of the crater are mostly due to what?
 A the explosion when the meteorite hit
 B the size and shape are the same as the meteorite
 C erosion soon after the impact
 D the angle between the ground and the path of the meteorite
- 42 How do the sizes of Kentucky's impact craters compare with the crater identified with the KT catastrophe?
 A Kentucky has no impact craters
 B about 100 times larger
 C more than 10 times smaller
 D about 10 times larger
 E about the same

- 43 The region of the Earth with the lowest density is its ____.
- A asthenosphere
 - B core
 - C crust
 - D lower mantle
- 44 Why do geologists know that the KT Catastrophe was associated with a meteorite impact?
- A Earth's magnetic field
 - B photographs of the asteroid
 - C composition of clay layer
 - D presence of large impact basin in Russia
 - E astronaut descriptions of comet
- 45 Which of the following measures the pull due to the Earth's gravity?
- A weight
 - B density
 - C mass
- 46 We know that certain regions inside the Earth are liquid because
- A of changes in the Earth's precession
 - B special Earthquakes occur there
 - C this region produces waves in oceans
 - D certain types of seismic waves do not pass through
 - E of tidal effects they have on the surface
- 47 When the moon is almost lined up between the Earth and sun what phase of the moon do we see?
- A first quarter
 - B last quarter
 - C gibbous
 - D new
 - E full
- 48 The Apollo astronauts left reflectors on the moon. Lasers were bounced off these mirrors to measure what?
- A speed of light
 - B effects of lasers on the moon
 - C the Earth's magnetic field
 - D distance between Earth and moon
 - E effects of moon dust on mirrors
- 49 The region of the Earth's mantle where the rocks are mushy is called the
- A lower mantle
 - B lithosphere
 - C crust
 - D asthenosphere
 - E outer core
- 50 Because of land tides, Kentucky is farthest from the center of the Earth when ____.
- A the moon is on the horizon
 - B the moon is full
 - C the moon is overhead
 - D the season is summer
 - E the sun is on the horizon
- >>>
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- >>>

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Answer Sheet:

Ast 191-1 Test 2 Dr. Ferland,

Fall 2004

1 b	2 b	3 b	4 e	5 d	6 b	7 c	8 d	9 a	10 b
11 a	12 e	13 c	14 a	15 c	16 d	17 b	18 c	19 d	20 c
21 d	22 e	23 c	24 d	25 c	26 b	27 b	28 b	29 e	30 e
31 c	32 e	33 b	34 c	35 a	36 a	37 b	38 a	39 b	40 a
41 a	42 c	43 c	44 c	45 a	46 d	47 d	48 d	49 d	50 c

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- 1 Which of the following Apollo flights carried a rover?
 - A 20
 - B 15
 - C 1
 - D 11
 - E 8

- 2 This project discovered that the lunar seas produce too much gravity, because they were pulled off course by mascons.
 - A Clementine
 - B Surveyor
 - C Ranger
 - D Viking
 - E Lunar Orbiter

- 3 What explains Venus' surface temperature?
 - A extensive layer of polar ice caps
 - B planet is covered by oceans
 - C thick layer of rain clouds
 - D dense atmosphere of oxygen
 - E runaway greenhouse effect

- 4 Why was the Apollo spacecraft composed of modules, which were discarded after use?
 - A each module could be launched with its own Saturn V rocket
 - B each module could land at a different place on the moon
 - C this avoided dangers of meteorites striking spacecraft
 - D this avoided dangers of thick layers of moon dust
 - E save weight

- 5 Why was the moon so important in understanding the early history of the solar system?
 - A it is small, and so it cold inside
 - B it have no active volcanoes
 - C all of these are reasons
 - D its surface changes very slowly
 - E it has no wind or water erosion

- 6 Why did astronomers at one time think that a planet named Vulcan existed close to the sun?
 - A they saw it collide with Venus
 - B it explained Venus' strong magnetic field
 - C explained why Mercury's orbit is not a true ellipse
 - D explained why Mercury and Venus have no moons
 - E explained the formation of the Earth's moon

- 7 The clouds in Venus' atmosphere are mostly due to ____ .
 - A carbon dioxide
 - B nitrogen
 - C water vapor
 - D argon
 - E acids and compounds produced by volcanoes

- 8 Very few large craters are found in which area of the moon, the light highlands or the dark marias?
 - A light highlands
 - B no craters on either dark or light area
 - C same number of craters in light and dark
 - D dark seas

- 9 What is the real reason the surface of Venus is so much hotter than the surface of Earth?
 - A it spins in the wrong direction
 - B it is closer to the sun
 - C it has 100x more atmosphere than Earth
 - D its mass is less than the Earth's
 - E it has a strong magnetic field

- 10 Why didn't oceans form on Venus when it was a young planet?
 - A protosun was brighter then now, so water boiled
 - B there never was any water on Venus
 - C It is too close to the sun for oceans to form even today
 - D the water froze as permafrost under the ground
 - E all water is in large polar caps

- 11 In the early 1960's the CIA's assessment of US and USSR economies was that a free market economy could not compete with a centrally managed economy.
 - A true
 - B false

- 12 We discussed the "zone of life" around the sun. What ingredient is only possible inside this zone, and is necessary for life as we know it?
 - A liquid iron cores
 - B liquid water
 - C active volcanoes
 - D strong magnetic fields
 - E planets spin rapidly on their axis

- 13 The Mode Decision was the hardest decision made during the Apollo Project. What was decided?
 - A how to build the command module
 - B which method to use to go to the moon
 - C how to select astronauts
 - D how to build the Saturn V rocket
 - E where to land on the moon

- 14 Where do large and long mountain ranges occur on the moon?
 - A at edges of plates
 - B around edges of maria
 - C at north pole
 - D near rilles
 - E at mid-ocean ridges

- 15 Which method of measuring ages tells you the time since the rock was exposed to space, but only on a place with no atmosphere?
 A icotonic
 B igneomatic
 C cosmic ray
 D radioactive
 E chronographic melt
- 16 Which of the following rock types are the oldest rocks found on the moon?
 A impact breccia
 B anorthosite
 C marble
 D basalt
 E limestone
- 17 Some people once thought that the lunar maria were thick layers of dust since this could explain which of their properties?
 A they are smooth
 B they are dark
 C they have rilles
 D they have large mountains
 E craters are all round
- 18 We know today that Venus cannot possibly have life on it because of its
 A atmosphere is too thin
 B very high temperature
 C super strong surface gravity
 D very low temperature
 E strong magnetic field
- 19 All of the following were given as reasons for doing the Apollo Project, except which one?
 A study the geology of the moon
 B beat the Russians
 C fulfill Kennedy's dream
 D prove we could do it
- 20 Very fluid lava can flow long distances building channels that look like river beds. These channels are called ____ .
 A highlands
 B river beds
 C chaotic channels
 D rilles
 E plate boundaries
- 21 Which is true about magnetism on the moon?
 A rocks and moon are both magnetized
 B the moon has a strong magnetic field
 C some rocks are magnetized, but the moon is not
 D the moon is magnetized, but not rocks
 E neither rocks nor the moon is magnetized
- 22 The Apollo 15 astronauts discovered a cliff where they could see many layers of rock beds. What caused these layers?
 A erosion by moon's ancient oceans
 B erosion by moon's ancient atmosphere
 C sedimentary rocks
 D repeated volcanic flooding
 E repeated impacts by meteors
- 23 Why was it important to get pictures of the impact craters created by the Ranger and Apollo spacecraft?
 A determine the strength of moon's magnetic field
 B this gives information on strength of the lunar surface
 C determine position of plates on moon's surface
 D prove that they really went to the moon
 E determine where they hit the moon
- 24 What did Galileo think the large dark spots on the moon were, when he first viewed the moon with a telescope?
 A images painted on by inhabitants of moon
 B cups
 C continents
 D oceans
 E deserts
- 25 Today it is thought possible that there is a large undiscovered planet closer to the sun than Mercury.
 A true
 B false
- 26 What was the name of the project whose goal was to crash land a TV onto the moon, to get close-up pictures of its surface?
 A Apollo
 B Lunar Orbiter
 C Lunar Impactor
 D Luna
 E Ranger
- 27 Roughly how long did it take the Apollo astronauts to fly to the moon?
 A 1 month
 B 3 days
 C 1 hour
 D 2 weeks
 E 1 day
- 28 The light areas you can see when you look at the full moon are which areas?
 A micrometeorite impacts
 B highlands
 C rilles
 D seas
 E cold traps

- 29 On Venus most of the carbon dioxide produced by volcanoes became ____.
- A oceans
 - B its atmosphere
 - C impact craters
 - D polar ice caps
 - E rocks
- 30 On the moon, the "magma ocean" refers to the period when
- A moon's magnetic field was created
 - B lunar seas cracked
 - C oldest meteorites formed
 - D rilles formed
 - E entire moon melted
- 31 Before the space age people thought that Venus would be a lot like which of the following planets (if you could see under its clouds).
- A Jupiter
 - B Mercury
 - C the Earth
 - D Mars
 - E the moon
- 32 Besides radioactive and cosmic ray exposure, what other method is used to tell the age of a planetary surface?
- A height of mountains relative to surface
 - B count number of rilles
 - C measure magnetic field strength
 - D count number of impact craters
 - E measure rotation rate
- 33 Today any water remaining on Venus would be present as
- A ice in cold traps
 - B oceans
 - C steam in atmosphere
 - D underground permafrost
 - E ice in polar caps
- 34 Which of the following planets is the only one now thought to have ice in its cold traps?
- A Venus
 - B Earth
 - C Mars
 - D Mercury
 - E Jupiter
- 35 What is true about sedimentary rocks on the moon?
- A only granite
 - B all moon rocks are sedimentary
 - C there are none at all
 - D only limestone
 - E only marble
- 36 On the Earth most of the carbon dioxide produced by volcanoes became ____.
- A the atmosphere
 - B oceans
 - C polar ice caps
 - D impact craters
 - E rocks
- 37 Which of the following two worlds are thought to have cold traps on them?
- A Mercury, Venus
 - B Mars, Venus
 - C Mars, Earth
 - D Mercury, Earth's moon
 - E Mars, Jupiter
- 38 Why must the material of the Earth have formed planetesimals by chemical processes at low temperatures?
- A Earth has no volatile compounds
 - B moon has no volatile compounds
 - C Earth has magnetic field
 - D moon has volatile compounds
 - E Earth has volatile compounds
- 39 In the giant impact model of the formation of the moon, the material knocked off from the Earth was heated up to high temperatures while exposed to space. This is why the moon has no
- A volatile elements
 - B electric field
 - C oceans
 - D gravitational field
 - E polar ice caps
- 40 The rocks of the moon have been heated to a very high temperature. How do we know this?
- A the moon has the density of rocks on the Earth's surface
 - B there is so much iron in the moon
 - C there is so little iron in the moon
 - D there are no volatile elements in moon rocks
 - E the moon has no air
- 41 Which of the following planets had no volcanic activity at all for more than 4 billion years?
- A Earth
 - B Venus
 - C both Earth and Venus
 - D Mercury
 - E Mars

- 42 The oldest rocks in Kentucky are about half a billion years old. The youngest rocks found on the moon are about ___ years old.
 A 3 billion
 B 100 million
 C 4.55 billion
 D 5 million
 E 1/2 billion
- 43 The lunar seas are actually the result of
 A huge impacts
 B flares from the sun
 C precession
 D plate tectonics
 E strong magnetic fields
- 44 All the planets in the solar system orbit counterclockwise viewed from the north. This was caused by ____.
 A the rotation of the galaxy
 B the rotation of the solar nebula
 C radioactive decays
 D the accretion of planetesimals
 E compression of a planet's surface
- 45 We know that there are no undiscovered planets closer to the sun than Mercury because such a planet would do which of the following?
 A hit the sun due to its eccentric orbit
 B produce total eclipses of the sun
 C transit the sun
 D eclipse our moon
 E cross Venus' orbit and hit it
- 46 What are most lunar seas shaped like?
 A long and thin, like rivers
 B square
 C long thin ellipses
 D round, almost circular
 E triangular
- 47 On the moon, anything in shadow has a temperature of roughly -300F, and anything in sunlight has a temperature of roughly 200F. What property of the moon causes this?
 A the moon has no atmosphere
 B the moon has no magnetic field
 C the moon is closer to the sun than the Earth
 D the seas are made of basalt
 E the moon is farther from the sun than the Earth
- 48 The best estimate is that towards the end of the epoch of the heavy bombardment the number of planetesimals had ___ and their size had ____.
 A gone down, gotten much larger
 B gone up, size stayed the same
 C gone down, grown larger than Jupiter
 D gone down, gotten much smaller
 E gone up, gotten much larger
- 49 Which of the following is true of Apollo missions 18 through 20?
 A they were never planned
 B canceled before spacecraft were built
 C spacecraft were built but never used
 D they went to the moon
 E they went to Mars
- 50 What was the goal of the Surveyor spacecraft?
 A study the moon's surface up close
 B study moon's magnetic field
 C land people on the moon
 D crash land TV camera on surface
 E make maps of the moon's surface
- >>>
 >>>Did you put 101101 in Special Codes?
 >>>

Special Codes= 101101

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Answer Sheet:

Ast 191-1 Test 3 Dr. Ferland,

Fall 2004

1 b	2 e	3 e	4 e	5 c	6 c	7 e	8 d	9 c	10 a
11 a	12 b	13 b	14 b	15 c	16 b	17 a	18 b	19 a	20 d
21 c	22 d	23 b	24 d	25 b	26 e	27 b	28 b	29 b	30 e
31 c	32 d	33 c	34 d	35 c	36 e	37 d	38 e	39 a	40 d
41 d	42 a	43 a	44 b	45 c	46 d	47 a	48 a	49 c	50 a

Name (Printed) _____

Signature _____

Student Number _____

Seat Number _____

IMPORTANT INSTRUCTIONS:

- => Fill in your name and student number in the space above and on the bubble sheet.
- => VERY IMPORTANT - Enter the number 101101 in the Special Codes section on the bubble sheet.

- => Do not lose credit on this exam! Make sure that your name (5 points) and
- => special codes (5 points) have been filled in properly on the bubble sheet.

- => Read the questions carefully. Watch out for true-false questions with scrambled answers.

- => THIS TEST IS DIFFERENT FROM PREVIOUS EXAMS!!!!
- => THE ENTIRE TEST MUST BE TURNED IN WITH THE BUBBLE SHEET AFTER THE EXAM.
- => You can grade your test by writing your answers on the answer sheet provided.

- => If you mark your answers you can grade it yourself by picking up an answer sheet.
The answer sheet will have the first part of the Special Codes number, 101.

- 1 Jovian planets have lots of moons. How did they form?
 - A from gas surrounding proto-planet
 - B ejected from planet by volcanoes
 - C captured from asteroid belt
 - D captured comets passing by
 - E from a collision, like our moon
- 2 What would people need to do to terraform Venus?
 - A create lots more atmosphere
 - B produce strong magnetic field
 - C remove lots of its atmosphere
 - D speed up its rotation
 - E melt ices below surface
- 3 The reason that Mars is so cold is that
 - A it has too little Greenhouse Effect
 - B its day is too long
 - C its year is too long
 - D its day is too short
 - E it is outside the zone of life
- 4 The moon can be thought of as having a "heavy" side and a "light" side. Which side is the "heavy" side?
 - A side pointed towards Earth
 - B side pointed away from Earth
 - C south pole
 - D north pole
- 5 On Mars flash floods appear to have started near volcanoes or impact craters. What causes these flash floods?
 - A liquid carbon dioxide
 - B magnetic field of crater
 - C water from underground permafrost melts
 - D gentle rainfall in denser atmosphere
 - E lava from volcano
- 6 We discussed the "zone of life" around the sun. What ingredient is only possible inside this zone, and is necessary for life as we know it?
 - A liquid water
 - B active volcanoes
 - C planets spin rapidly on their axis
 - D liquid iron cores
 - E strong magnetic fields
- 7 The Barringer family paid geologists to drill deep into their meteor crater. What did they find buried under it?
 - A large buried body of iron meteorite
 - B nothing
 - C thousands of fragments of stony meteorites
 - D thousands of fragments of iron
 - E large buried body of stony meteorite
- 8 Very fluid lava can flow long distances building channels that look like river beds. These channels are called ___.
 - A chaotic channels
 - B plate boundaries
 - C river beds
 - D rilles
 - E highlands
- 9 Mostly Mars' present atmosphere is composed of
 - A argon
 - B water
 - C carbon dioxide
 - D oxygen
 - E nitrogen
- 10 The two most common elements in a Jovian planet are
 - A hydrogen and helium
 - B carbon and oxygen
 - C argon and neon
 - D nitrogen and hydrogen
 - E neon and sulfur
- 11 The mass extinctions during the KT catastrophe were most severe in this part of the Earth.
 - A North America
 - B Australia
 - C Europe
 - D Africa
 - E Antarctica
- 12 The eroded mesa on Mars that looks like a human face was found where?
 - A Tharsis bulge
 - B Northern Plains
 - C northern polar ice cap
 - D Valley of the Mariners
 - E one of Mars' moons
- 13 Compare winds on Mars and Venus.
 - A both very windy
 - B both dead calm
 - C nothing is known about winds on either planet
 - D Mars, windy. Venus, dead calm
 - E Venus, windy. Mars dead calm
- 14 Scientists first realized that Nuclear Winter and an asteroid impact on the Earth could change the climate of the Earth when they saw
 - A Venus' atmosphere
 - B cold traps on the moon
 - C the rings of Saturn
 - D dried river beds on Mars
 - E dust storms on Mars

- 15 Rilles on the moon are shaped like what?
 A huge mountains
 B large circles
 C elliptical
 D rivers
 E triangles
- 16 When we discussed the search for extraterrestrial artifacts, the most likely places to find signs of visits would be
 A north pole of Earth
 B cold traps in moon
 C New Mexico
 D any ancient surface, billions of years old
 E Atlantic ocean
- 17 What did Galileo think the large dark spots on the moon were, when he first viewed the moon with a telescope?
 A cups
 B deserts
 C continents
 D images painted on by inhabitants of moon
 E oceans
- 18 How do the tidal bulges on the Earth affect the orbit of our moon? They cause the moon to have ...
 A smaller orbit, shorter period
 B larger orbit, shorter period
 C smaller orbit, longer period
 D larger orbit, longer period
- 19 The study of seismic waves tells us that ___.
 A the mantle is liquid
 B granite is denser than basalt
 C the outer core of the Earth is liquid
 D the Earth is a permanent magnetic
 E the Earth is 4.5 billion years old
- 20 The rocks of the moon have been heated to a very high temperature. How do we know this?
 A there are no volatile elements in moon rocks
 B there is so much iron in the moon
 C the moon has the density of rocks on the Earth's surface
 D the moon has no air
 E there is so little iron in the moon
- 21 Which is a major reason that we are so interested in understanding Mars? Understanding ...
 A rift valleys on Earth
 B volcanoes on Earth
 C magnetic fields on Earth
 D the epoch of the heavy bombardment
 E the origins of life
- 22 Seasons on Mars are affected by
 A its tilt
 B its distance to sun
 C Mars has no seasons
 D its distance from Jupiter
 E its tilt and distance to sun
- 23 Which of the following has the greatest affect on the Earth's climate?
 A heat and light from the sun
 B volcanoes
 C heat from deep inside the Earth
 D cosmic rays from sun
 E Earth's magnetic field
- 24 The Tharsis Bulge on Mars is a ___.
 A ocean floor
 B large shield volcano
 C river valley
 D rift valley
 E continent
- 25 The sky on Mars is pink. This is due to
 A very high temperatures in atmosphere
 B great distance from sun
 C oxygen in atmosphere
 D wind-blown dust
 E carbon dioxide in atmosphere
- 26 The moons of Mars are probably actually
 A captured asteroids
 B captured comets
 C smaller than a basketball
 D bigger than our moon
 E bigger than Mercury
- 27 Which of the following led to the discovery of the asteroids?
 A Bode-Titius Rule
 B Newton's Law
 C Principle of Equivalence
 D kepler's Laws
- 28 We think that forming amino acids is easy to do, and happens naturally all across the galaxy, since
 A they are the most common life form on Mars
 B they are the most common life form on Earth
 C they are attracted to stars
 D they were found in meteorites
 E they appeared on Earth after 2 billion years

- 29 If the calendar were not corrected for precession, which of the following would always be true over the 26,000 year period?
 A June 21 always when Earth farthest from sun
 B June 21 always a solstice
 C June 21 always an equinox
 D June 21 would occur at different seasons
 E summer always when Earth closest to sun
- 30 Plate tectonics is another name for which of the following?
 A pressure in the inner core
 B convection in the outer core
 C continental drift
 D formation of the Earth's atmosphere
 E isostasy
- 31 The "sun sign" in astrology is related to the position of the sun in the ___ as seen from Earth.
 A solstice
 B ecliptic
 C precession
 D perihelion
 E nutation
- 32 Which is the closest planet to the Earth, and the easiest one to get to?
 A Venus
 B Jupiter
 C Mars
 D Saturn
 E Mercury
- 33 Mars has a red color because that is the natural color of this type of rocks, which make up much of the surface of Mars.
 A magnetic rocks
 B granites
 C sedimentary rocks
 D iron-rich basalts
- 34 This project discovered that the lunar seas produce too much gravity, because they were pulled off course by mascons.
 A Lunar Orbiter
 B Viking
 C Clementine
 D Ranger
 E Surveyor
- 35 Which is the oldest region of the moon?
 A highlands
 B seas
 C all the same age
 D rilles
 E craters in seas
- 36 Studies of conditions on which of these planets may teach us about global climate change and the origins of life.
 A Venus
 B Mars
 C Saturn
 D Jupiter
 E the moon
- 37 Besides radioactive and cosmic ray exposure, what other method is used to tell the age of a planetary surface?
 A count number of impact craters
 B height of mountains relative to surface
 C measure rotation rate
 D measure magnetic field strength
 E count number of rilles
- 38 Which terrestrial planet has the biggest moon.
 A Earth
 B Mars
 C Venus
 D Mercury
 E Jupiter
- 39 Which type of planet is Pluto thought to be?
 A a star like the sun
 B Kryptonian Planet
 C Jovian planet
 D Terrestrial planet
 E a very large comet
- 40 The Moon Illusion involves the moon's
 A magnetic field
 B rotation period
 C tidal pull on Earth
 D size near the horizon
 E shape near new moon
- 41 The shape of an orbit of a planet or comet is most precisely described as a(n) ___ if you look at it very closely.
 A hyperbaloid
 B circle
 C cone
 D ellipse
 E parabaloid
- 42 Which of the following pose the greatest impact danger for the Earth?
 A asteroids
 B comets
 C Jovian planets
 D all the same danger
 E other terrestrial planets

- 43 Any water found near the center of a Jovian planet would be in the form of ice due to
 A very high temperature
 B very high pressure
 C very low temperature
 D mixture of low pressure and high temperature
 E very low pressure
- 44 For many years people thought that the dark areas on Mars that move around from year to year were plants growing on the surface. Today we know that this is really
 A bacteria
 B wind blown volcanic dust
 C oceans of liquid water
 D algae
 E long rivers
- 45 All 12 of the spacecraft that landed on Venus were built by this country.
 A the countries of Europe
 B Russia
 C China
 D USA
 E India
- 46 Which planet had a climate like the Earth's for the first few billion years, then underwent a catastrophic climate change?
 A Pluto
 B Mars
 C Earth's moon
 D Mercury
 E Venus
- 47 Solar eclipses always occur at
 A aphelion of Earth's orbit
 B Jan 23
 C full moon
 D vernal equinox
 E new moon
- 48 The Cassini mission will send a spacecraft to land on ____, a moon of Saturn.
 A Pluto
 B Titan
 C Europa
 D Io
 E Ganymede
- 49 Which has the greater mass, a 1 kg loaf of bread, or a 1 kg piece of lead?
 A impossible to determine
 B both the same
 C bread
 D lead
- 50 What is the first step to terraforming Mars?
 A start greenhouse effect
 B discover meaning of word terraform
 C changes in the planet's tilt
 D large temperature changes between night and day
 E changes in the planet's orbit
- 51 Which of the following two worlds are thought to have cold traps on them?
 A Mars, Venus
 B Mars, Jupiter
 C Mars, Earth
 D Mercury, Earth's moon
 E Mercury, Venus
- 52 A Jovian planet is mostly made out of
 A iron
 B rocks
 C liquids
 D very hot gas
 E gas like Earth's atmosphere
- 53 Today, it would be very easy to establish simple life like algae on which planet or moon?
 A Titan
 B Mars
 C Venus
 D Mercury
 E Jupiter
- 54 What was the single major difference between the Earth and Venus that is responsible for Venus' atmosphere?
 A Earth has oceans
 B Venus has more volcanoes
 C Venus has more water
 D Venus generated more carbon dioxide
 E Earth generated more carbon dioxide
- 55 What about Mars is responsible for its great winds?
 A hot temperatures
 B cold temperatures
 C large temperature change from day to night
 D polar ice caps
 E permafrost below surface
- 56 Tidal forces always produce a
 A stretching effect
 B more rapid rotation of the planet
 C decrease in the orbital period
 D eccentric orbit
 E compression of the planet

- 57 The sun sign for March 1 now is not the same as the sun sign was 2000 years ago because ____.
- A the calendar was changed in 1900
 - B of changes in the Earth's orbit
 - C stars drift through space, changing constellations
 - D of precession of Earth's poles
 - E of continental drift
- 58 Which is now the most important single place on the Earth for finding all types of meteorites?
- A Antarctica
 - B Atlantic Ocean
 - C South America
 - D Australia
 - E Pacific Ocean
- 59 What was the goal of the Surveyor spacecraft?
- A study the moon's surface up close
 - B make maps of the moon's surface
 - C land people on the moon
 - D crash land TV camera on surface
 - E study moon's magnetic field
- 60 What happened to Venus about half a billion years ago?
- A rotation turned around
 - B magnetic field disappeared
 - C oceans formed in middle period
 - D entire surface reformed by volcanoes
 - E atmosphere formed for first time
- 61 We suspect that forming simple single-celled life is easy and may happen all across the galaxy because
- A we can detect life in other solar systems
 - B it happened real fast here on Earth
 - C Mars has life
 - D we see life on all terrestrial planets
 - E Venus has life
- 62 Because of the way Kepler's second law works, comets spend most of their time ____ the sun, and a very short time ____ the sun.
- A close to, far from
 - B far from, close to
 - C none of these is correct
- 63 What was the major thing that allowed the last three Apollo flights to learn so much more about the moon?
- A they had the first seismometers
 - B they carried a rover
 - C they brought back the first moon rocks
 - D better spacesuits
 - E landed near north pole of moon
- 64 What is the source of the internal heat that makes some moons of Jovian planets very hot inside?
- A radioactive decay
 - B impacts and accretion
 - C compression
 - D tidal stretching
 - E heat of formation
- 65 We know that there are no undiscovered planets closer to the sun than Mercury because such a planet would do which of the following?
- A produce total eclipses of the sun
 - B hit the sun due to its eccentric orbit
 - C eclipse our moon
 - D cross Venus' orbit and hit it
 - E transit the sun
- 66 Of all the planets, this one is the one that is most nearly Earth's twin in size and mass.
- A Mercury
 - B Jupiter
 - C Uranus
 - D Venus
 - E Mars
- 67 Dried up river beds as long as the Mississippi River, with switchbacks and an extensive delta at its end, are found on Mars. Such features must have been caused by
- A plate tectonics
 - B gentle rainfall in a denser atmosphere
 - C meteor impacts
 - D flash floods from melted permafrost
 - E volcanoes
- 68 Where is much of Mars' atmosphere today?
- A escaped into space
 - B on its moons
 - C frozen under ground
 - D in the air
- 69 All Jovian planets are outside the sun's "zone of life".
- A false
 - B true
- 70 If our solar system has been visited by extraterrestrials 10 times in the past 5 billion years, on a regular basis, how many years is it between visits?
- A 5 billion
 - B 50 billion
 - C 500 million
 - D 50,000
 - E 500,000

- 71 If a planet's orbit almost looks like a circle, then its eccentricity is very
 A heavy
 B light
 C small
 D large
 E precessional
- 72 Which is the best description of why astronauts appear weightless in the Space Shuttle?
 A there is no gravity that far above the Earth's surface
 B moon's gravity balances Earth's gravity
 C they all fall around the Earth together
 D Earth's magnetic field resists gravity
 E they have no mass that far above the Earth's surface
- 73 All of the rocks from Mars that have been studied here on Earth came from where? (How did they get to the Earth?)
 A robotic spacecraft brought them back
 B meteorites
 C no rocks from Mars have been studied
 D Apollo astronauts brought them back
- 74 A body that is held together by its gravity will always .
 ..
 A be close to the sun
 B be round like a ball
 C have a strong magnetic field
 D spin very fast
 E spin very slowly
- 75 How do the sizes of Kentucky's impact craters compare with the crater identified with the KT catastrophe?
 A Kentucky has no impact craters
 B about 10 times larger
 C about the same
 D about 100 times larger
 E more than 10 times smaller
- 76 The Cassini mission to Saturn has a lander whose main purpose is to
 A measure mass of Saturn
 B photograph surface of Saturn
 C measure temperature of Saturn's atmosphere
 D find out what Saturn's rings are made of
 E search for life on Titan
- 77 Today, water cannot be a liquid on Mars because
 A temperature is always too high
 B magnetic field is too strong
 C air pressure is too low
 D air pressure is too high
 E temperature is always too low
- 78 What melted the chondrules in carbonaceous chondrite meteorite?
 A rapid rotation
 B accretion
 C intense radioactivity
 D strong magnetic field
 E strong compression
- 79 The interiors of Venus and the Earth are very similar, so it is very surprising that Venus does not have ____ . The reason for this is not understood today.
 A continents
 B any moons
 C an atmosphere
 D a magnetic field
 E rolling plains like Earth's ocean bottoms
- 80 It is thought possible that there is primitive life on Titan because of its
 A thick nitrogen atmosphere
 B liquid water deep under its surface
 C warm surface temperatures
 D microfossils inside meteorites
 E strong magnetic field
- 81 Most of the mass of a Jovian planet actually came from
 A the Earth
 B primitive atmosphere in solar nebula
 C asteroids from the asteroid belt
 D rocky planetesimals
 E the sun
- 82 If you suddenly turned off the forces due to gravity, which of the following would happen?
 A Earth's orbital period would get faster
 B moon fall onto Earth
 C Earth fly off across intergalactic space
 D Moon's orbital period would get faster
 E Earth fall onto Sun
- 83 What happened to Apollo 18, 19 and 20?
 A planed, but never built
 B used in Skylab program
 C built but never used
 D used in Space Shuttle program
 E never planned
- 84 What happened to the Lunar Orbiters when they flew over the lunar seas?
 A discovered seas are basalt
 B discovered moon totally devoid of life
 C pulled down by strong magnetic field
 D discovered seas are solid
 E pulled down a bit by strong gravity

- 85 Where does the light illuminating the night part of the moon and causing the "new moon in the old moon's arms" come from?
 A the moon's atmosphere
 B Mars
 C Venus
 D direct illumination from the sun
 E sunlight reflected from the Earth
- 86 People once thought that Mars had "canals" dug by an intelligent civilization. What were these actually?
 A canals dug by an intelligent civilization
 B optical illusion
 C tectonic ridges
 D rilles on surface
 E not known what they are
- 87 How does the spacing between the orbits of the terrestrial planets compare with the spacing between the orbits of the Jovian planets?
 A terrestrial planets much closer together than Jovian
 B terrestrial planets much farther apart than Jovian
 C spacing between terrestrial and Jovian planets the same
- 88 What happened at the Permian Triassic mass extinction?
 A all oceans evaporated
 B radioactive decays became intense
 C magnetic field stopped
 D extensive volcanoes changed climate
 E cosmic ray exposure increased
- 89 The clouds in Venus' atmosphere occur mainly at very high altitudes - its atmosphere is actually quite clear below 20 mile heights.
 A true
 B false
- 90 Which part of the Earth is broken into plates?
 A lithosphere
 B crustalsphere
 C mantle
 D asthenosphere
 E outer core
- 91 Which is the denser type of igneous rock that forms much of the Earth sea floors?
 A shale
 B basalt
 C limestone
 D coal
 E granite
- 92 Iron meteorites formed near the center of a differentiated protoplanet. Why does the iron in these meteorites have a crystalline pattern?
 A water present in protoplanet
 B very slow rate of cooling
 C amino acids present in protoplanet
 D rapid spinning of protoplanet
 E very strong magnetic field
- 93 How is the age of the surface of Venus measured?
 A cosmic ray dating
 B from erosion of river valleys
 C count impact craters
 D radioactive dating
 E strength of its magnetic field
- 94 We have used spacecraft to explore most of the planets of the solar system.
 A true
 B false
- 95 If it is now considered possible that life might now exist on Mars. Where is the most likely place this life could exist but not have been detected by the Viking landers?
 A near south pole
 B frozen in ice
 C on top of highest volcanoes
 D near central mountains of impact craters
 E underground
- 96 What is most of the matter in a Jovian planet composed of?
 A liquid hydrogen
 B iron
 C gaseous hydrogen
 D rocks
 E nickel
- 97 The highest temperatures that occur over a day on Mars are how hot?
 A 300F
 B hot enough to melt lead
 C -350F
 D -200F
 E like a spring day in Kentucky
- 98 The north pole of the Earth wobbles around in a large circle, making a complete revolution in about ____ .
 A 1 hour
 B 1 million years
 C 1 year
 D 26,000 years
 E 1 day

Special codes=101101

Ast 191-1 Test 4 Dr. Ferland,

Fall 2004 Special codes=101101

99 What is the Valley of the Mariners named after?

A a series of US spacecraft.

B naval explorers of the 19th century

C a famous astronomer

D a valley on the Earth

E a rift valley on Venus

100 When different cultures viewed the same constellation, they almost always came up with the same animals or objects.

A false

B true

>>>

>>>Did you put 101101 in Special Codes?

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Special Codes= 101101

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1	00000	1

Answer Sheet:

Ast 191-1 Test 4 Dr. Ferland,

Fall 2004

1 a	2 c	3 a	4 a	5 c	6 a	7 b	8 d	9 c	10 a
11 a	12 b	13 d	14 e	15 d	16 d	17 e	18 d	19 c	20 a
21 e	22 e	23 a	24 e	25 d	26 a	27 a	28 d	29 d	30 c
31 b	32 a	33 d	34 a	35 a	36 b	37 a	38 a	39 e	40 d
41 d	42 b	43 b	44 b	45 b	46 b	47 e	48 b	49 b	50 a
51 d	52 c	53 b	54 a	55 c	56 a	57 d	58 a	59 a	60 d
61 b	62 b	63 b	64 d	65 e	66 d	67 b	68 c	69 b	70 c
71 c	72 c	73 b	74 b	75 e	76 e	77 c	78 c	79 d	80 a
81 b	82 c	83 c	84 e	85 e	86 b	87 a	88 d	89 a	90 a
91 b	92 b	93 c	94 a	95 e	96 a	97 e	98 d	99 a	100 a