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1 Which of the following is a Jovian planet?

- A Neptune
- B Mercury
- C Earth
- D Mars
- E Venus

2 Why is the quarter moon called that?

- A happens when quarter way through lunar month
- B moon sets at quarter past 6PM
- C moon quarter way to full
- D quarter of moon's surface not visible
- E quarter of moon's surface visible

3 The Milky Way is the name of our

- A sun
- B solar system
- C galaxy
- D terrestrial planets
- E moon

4 Of the nine planets of the solar system, the one with many properties least like a true planet is ____.

- A Pluto
- B Jupiter
- C Earth
- D Mercury
- E Saturn

5 What time of day does a last quarter moon appear overhead?

- A midnight
- B sunrise
- C sunset
- D anytime
- E noon

6 A 500 kg elephant is 10 meters away from you, and a 500 kg pile of feathers is 5 meters away. Which will have the stronger gravitational attraction on you?

- A feathers
- B both the same
- C elephant
- D neither pull on you at all

7 If you take a long exposure picture of the night time sky, the stars will appear as streaks because of the Earth's

- A magnetic field
- B revolution around sun
- C mass
- D continental drift
- E rotation on its axis

8 The "sun signs" in astrology are actually

- A constellations near the north pole
- B constellations of the zodiac
- C religious signs near the sun
- D small spots on the sun visible during eclipses
- E constellations near the south pole

9 Many planets appear brighter than stars. Why?

- A optical illusion caused by Earth's atmosphere
- B planets generate more energy than stars
- C planets spin faster than stars
- D planets are much closer to us than the stars
- E planets are bigger than stars

10 When we see other planets in the solar system, where did the light come from?

- A reflected sunlight
- B produced by heat from planet's interior
- C produced by planet's magnetic field
- D produced by planet's gravitational field
- E emitted by planet's atmosphere storms

11 What keeps the Earth in the solar system?

- A the Earth's gravity
- B the sun's gravity
- C the spinning of the Earth
- D the Earth is not moving
- E the moon

12 What is the phase of the moon when we see only its night time hemisphere?

- A new
- B first
- C full
- D quarter
- E first and last quarters

13 The rapid spinning of the Earth on its rotation axis helps keep ____

- A the north and south poles pointed at the same place
- B the oceans on the surface
- C the polar caps cold
- D the Earth in orbit around the sun
- E the moon in orbit around the Earth

14 You could decrease your weight on a certain planet by doing any of the following, EXCEPT

- A increasing your mass
- B decreasing your mass
- C decreasing planet's mass
- D getting further away from the planet

15 If we measure the path of a spacecraft as it flies past a planet, we can determine the planet's ____.

- A mass
- B temperature
- C radius
- D rotation rate
- E distance from sun

16 Comets are mostly composed of ____.

- A rocks
- B water ice
- C iron
- D uranium
- E liquid hydrogen

17 On a scale model where the Earth is a basketball, the sun is the size of a ____ about ____ away.

- A baseball, 2 feet
- B basketball court, 2 miles
- C person, 5 feet
- D baseball, 10 yards
- E penny, 3 feet

18 What does the eccentricity of the Earth's orbit, and the separation between the sun and Earth, have to do with the seasons?

- A summer when Earth at one focus
- B summer always at aphelion
- C summer when sun at one focus
- D nothing
- E summer always at perihelion

19 Which of the following is furthest from the sun?

- A Venus
- B Mars
- C Uranus
- D Jupiter
- E Neptune

20 The gravity of the sun does which of the following?

- A causes moon to have phases
- B moon holds solar system together
- C holds solar system together
- D makes Earth spin, causing day and night
- E continents drift on the Earth

21 The Earth is closest to the sun during which month?

- A January
- B always the same distance from sun
- C April
- D June
- E August

22 The distance from the Earth to the sun varies between ____ and ____ million miles.

- A 92, 95
- B 10, 130
- C 85, 120
- D 93, 93 (always the same)
- E 150, 190

23 A gibbous moon can occur between which two phases?

- A new and first quarter
- B last quarter and new
- C there is no moon phase called gibbous
- D first quarter and full

24 The biggest planet in the solar system is

- A Mercury
- B Earth
- C Jupiter
- D Pluto
- E Saturn

25 Which is the order of the Jovian planets, from the closest to furthest from the sun?

- A Saturn, Jupiter, Neptune, Uranus
- B Jupiter, Saturn, Neptune, Uranus
- C Uranus, Neptune, Jupiter, Saturn
- D Jupiter, Saturn, Uranus, Neptune
- E Neptune, Uranus, Saturn, Jupiter

26 The ____ of an object tells us how much stuff is in it, and does not depend on which planet we live on

- A height
- B weight
- C temperature
- D mass
- E color

27 The length of the month is most related to the motion of

- A the moon around the Earth
- B the sun around the galaxy
- C the Earth around the sun
- D the spin of the sun on its axis
- E the spin of the Earth on its axis

28 Planets tend to rotate on their axis and revolve around the sun in the same direction.

- A false
- B true

29 Which of the following constellations did not exist when the Babylonians invented astrology 3000 years ago, but is now one of the constellations on the ecliptic?

- A Cancer
- B Taurus
- C Leo
- D Orion
- E Ophiuchus

30 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 when N pole points away from sun
- B when Earth closest to sun
- C only near full moon
- D only near new moon
- E when Earth farthest from sun

31 On a scale model where the Earth is the size of a basketball, a Jovian planet is roughly how large?

- A a person
- B the Earth
- C the sun
- D Kentucky
- E Lexington

32 The circumference of the Earth is roughly 25,000 miles, and we spin in a complete circle in 24 hours. Roughly how fast is the surface of the Earth moving?

- A 186,000 mi/sec
- B 100,000 mi/hr
- C 0, we do not move
- D 1,000 mi/hr
- E 50 mi/hr

33 Over one year how do the directions of the north and south poles of the Earth change relative to the stars?

- A this is not known today
- B precess quarter way around a circle
- C not very much at all
- D precess half way around a circle
- E north and south poles flip over

34 The "Age of Aquarius" refers to which of the following?

- A sun in Aquarius on summer solstice
- B sun in Aquarius on Jan 1
- C sun in Aquarius on first day of spring
- D sun in Aquarius on autumnal equinox
- E sun in Aquarius on winter solstice

35 In traditional calendars, the first day of the year was

- A vernal equinox
- B autumnal equinox
- C summer solstice
- D winter solstice
- E Nov 15

36 On a scale model where the Earth is a basketball, the solar system is roughly the size of

- A Kentucky
- B the separation between the Earth and moon
- C a baseball
- D the Earth
- E Lexington

37 If you drew the shapes of the orbits of the eight major planets, they would appear most like a(n)

- A very eccentric ellipse
- B circle
- C box
- D straight line

38 How does the mass of the Earth compare to the mass of a Jovian planet like Jupiter?

- A Earth about same mass as Jupiter
- B Jupiter's mass is not known
- C Earth is much, much smaller
- D Earth about a half the mass of Jupiter
- E Earth is ten times the mass of Jupiter

39 The part of the Earth's orbit when it is closest to the sun is called the ____.

- A solstice
- B apogee
- C aphelion
- D perigee
- E perihelion

40 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 Venus
- B the moon's atmosphere
- C sunlight reflected from the Earth
- D direct illumination from the sun
- E Mars

41 Viewed from a place high in space above the north pole of the sun, how does the sun rotate?

- A clockwise
- B north to south
- C counterclockwise
- D the sun does not rotate
- E south to north

42 The seasons on the Earth are caused by changes in the distance between the Earth and sun

- A false
- B true

43 Kepler's third law is very important since, using it, we can measure a planet's ____ by watching moon's go around it.

- A length of its day
- B mass
- C composition of its atmosphere
- D depth of its oceans
- E magnetic field

44 On a scale model where the Earth is a basketball, the moon is the size of a ____ about ____ away.

- A person, 5 feet
- B large room, 2 miles
- C baseball, 10 yards
- D penny, 3 feet
- E baseball, 2 feet

45 Noon time, or mid-day, was originally the time when
A the aphelion of the Earth's orbit
B the North pole of the Earth most nearly points to the sun
C the moon was at its new phase
D the Earth is closest to the sun
E the sun was most nearly overhead

46 Which of the following is true of the four spacecraft now
leaving the solar system?
A will fall back to Earth in a few hundred years
B will slow down to a dead stop in space
C will fall into the sun
D will fall back to Earth in a few million years
E they will continue on for billions of years

47 A collision between an asteroid and the Earth is very
dangerous, mostly due to which of the following?
A asteroid's magnetic field can pull away Earth's atmosphere
B very high orbital speeds involved
C asteroid colliding with sun can destroy sun and Earth
D asteroids have more mass than the Earth

48 Viewed from the north, most moons go around their planets
in which direction?
A clockwise
B counterclockwise
C half go clockwise, other half counterclockwise

49 The fact that all falling objects fall at the same rate is
the reason why
A the shuttle has wings
B the shuttle needs rockets to stay in orbit
C astronauts appear weightless in orbit
D astronauts wear spacesuits when outside the shuttle

50 On a scale model where the Earth is the size of a basket
ball, how far away would nearby planets like Mars or Venus
be?
A 100 miles
B a million miles
C 10,000 miles
D a mile
E 10 yards

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Special Codes= 101101

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1	00000	1	1	00000	1

Answer Sheet:

Ast 191-2 Test 1 Dr. Ferland,

Spring 2000

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

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1 The tallest mountain on Mars is about 25 miles high. What would you guess about the interior of the planet?

- A far less mushy than the Earth
- B Mars has a far stronger magnetic field
- C far more mushy than the Earth
- D about as mushy as the Earth
- E Mars is farther from the sun than Pluto

2 The Earth is heated by decays of radioactive elements.

Where did these radioactive elements come from?

- A produced by convection in core of Earth
- B produced by great temperature at center of Earth
- C result of human wastes
- D trapped in Earth when it formed
- E produced by great pressure at center of Earth

3 When the Earth melted what happened to most of the dense metals like gold or platinum?

- A sank to center of Earth
- B floated to top
- C caught in rocks near surface
- D evaporated into space
- E caught in rocks in mantle

4 The Barringer family paid geologists to drill deep into their meteor crater. What did they find buried under it?

- A thousands of fragments of iron
- B large buried body of stony meteorite
- C large buried body of iron meteorite
- D nothing
- E thousands of fragments of stony meteorites

5 Convection is when heat flows by

- A electric fields
- B magnetic fields
- C precession of Earth's axis
- D material moving
- E nutation

6 Convection in the asthenosphere causes which of the following to happen on the Earth?

- A Earth has an atmosphere
- B Earth has a magnetic field
- C plate tectonics
- D Earth precesses
- E the seasons

7 Heat flowing through the asthenosphere of the Earth causes which of the following to occur there?

- A convection
- B magnetic fields
- C conduction
- D precession
- E the seasons

8 What weathering process will eventually wear away the equipment left on the moon by the Apollo astronauts?

- A micrometeorite impacts
- B volcanoes
- C wind and water erosion
- D plate tectonics
- E nothing - they will last forever

9 You can tell whether a planet has hot flowing liquid metals deep inside by measuring which of the following?

- A length of its day
- B number of moons it has
- C magnetic field
- D length of its year
- E depth of its oceans

10 The moon has lots of impact craters a few miles across while the Earth has few. Why?

- A no big meteorites can get through Earth's atmosphere
- B craters on Earth have eroded away
- C moon rocks more brittle, form craters easier
- D moon hit more often than Earth
- E Earth's magnetic field deflects meteors

11 Wind and water erosion create which type of rocks?

- A sedimentary
- B magma
- C precessional
- D igneous
- E lava

12 The mass extinctions during the KT catastrophe were most severe in this part of the Earth.

- A Australia
- B North America
- C Africa
- D Antarctica
- E Europe

13 Only telescopes with the very largest aperture can be used to see galaxies at the edge of the Universe because ____.

- A they are so small
- B they are so far away and faint
- C they move so fast
- D they only emit gamma-rays
- E they precess so rapidly

14 What does the moon look like in the middle of a lunar eclipse, when it is in the shadow of the Earth?

- A like normal full moon, bright white circle of light
- B bright blue color
- C completely invisible
- D very red color
- E like normal first quarter moon

15 Isostacy refers to which of the following?

- A convection in core
- B Curie point
- C melting of the Earth when it was young
- D continents floating on asthenosphere
- E generation of the Earth's magnetic field

16 The dark areas visible on a full moon are the moon's ____.

- A poles
- B craters
- C rilles
- D seas
- E highlands

17 The ____ of a telescope is made as large as possible, to gather as much light as possible.

- A magnification
- B aperture
- C focal length
- D altitude

18 A lunar eclipse can only be viewed when it is

- A daytime
- B nighttime
- C either night or day time

19 What do tidal forces try to do to the length of the Earth's day?

- A make it equal to the month
- B Earth will keep same face pointed to sun
- C make it speed up
- D this is unknown

20 At one time people thought that the seas of the moon were thick layers of dust. What did they think created this dust?

- A water erosion
- B volcanoes
- C meteorite impacts
- D wind erosion
- E plants growing in lunar soil

21 Meteor impacts on the moon do not create vastly thick layers of moon dust people expected. What happens to much of the rock debris created by the impact?

- A melted and sinks to bottom of crater
- B pieces blown off moon
- C vaporized and escapes from moon
- D stick together since moon rocks are tougher than thought
- E dust landed in lunar seas, causing them to be flat

22 The asthenosphere of the Earth has which of the following properties:

- A solid rock
- B mushy rock
- C solid iron
- D liquid iron
- E liquid rock

23 We know that the Earth and moon are not, on the average, composed of the same material, because their ____ are not the same.

- A rotation rates
- B masses
- C densities
- D radius
- E magnetic fields

24 We know that certain regions inside the Earth are liquid because

- A certain types of seismic waves do not pass through
- B of changes in the Earth's precession
- C this region produces waves in oceans
- D of tidal effects they have on the surface
- E special Earthquakes occur there

25 In a hot spot volcano, the hot spot occurs where?

- A inner core
- B outer core
- C mantle
- D atmosphere
- E north and south poles

26 Most impact craters are usually circular because the crater is really the result of

- A an explosion
- B the shape of meteorite - most are round
- C wind and water erosion
- D the path of meteorite, most strike at 90 degree angle
- E hot spots in the mantle

27 A reflecting telescope brings light to a focus by ...

- A bouncing light off a curved mirror
- B passing light through a lens
- C passing light through a mirror
- D bouncing light off a lens

28 What must astronomers do if they want to look at the universe in x-ray, gamma-ray, or ultraviolet light?

- A get telescopes above Earth's atmosphere
- B make telescope's magnification very large
- C make telescope's aperture very large
- D use refracting instead of reflecting telescope
- E use reflecting rather than refracting telescope

29 The results of micro-meteorite impact are very seldom seen on the Earth. Why?
 A their craters are eroded away by wind and water
 B they don't get through our atmosphere
 C most land in the oceans
 D they are deflected by Earth's magnetic field
 E they create volcanic hot spots in the mantle

30 By comparing the densities of the Earth and moon, we know that compared to the Earth, the moon must have very little
 A rocks
 B iron
 C water

31 Lunar and solar eclipses do not occur every month. This is due to which of the following facts about the moon?
 A orbit is tilted relative to the rest of the solar system
 B it has a very eccentric orbit
 C it orbits counterclockwise viewed from the north
 D it has no atmosphere
 E it has no magnetic field

32 The fact that rocks in the asthenosphere of the Earth are mushy is the reason that
 A biggest mountains are 6 miles high
 B Earth has tides
 C Earth has an atmosphere
 D Earth has a magnetic field
 E Earth precesses

33 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 west to east once per year
 B stays in same place in sky all the time
 C moves from east to west once per day
 D moves from west to east once per day
 E moves from east to west once per year

34 Which of the following measures how tightly packed together something is?
 A weight
 B mass
 C density
 D color

35 What will happen to a moon held together by gravity, if it moves closer to its planet than the Roche limit?
 A it will be pulled apart by tidal forces
 B it will have a very long orbital period
 C undergo synchronous rotation
 D it will have an eccentric orbit
 E it will undergo rapid precession

36 Astronomers did not know that the planet Mercury had craters on it, and looked a lot like a moon, until a spacecraft flew past it. Why was it impossible to get a good view of Mercury from the surface of the Earth?
 A blurring due to Earth's atmosphere
 B telescope magnification not large enough
 C telescope aperture not large enough
 D telescope optics not well made
 E Mercury is covered with clouds

37 When we discussed the search for extraterrestrial artifacts, the most likely places to find signs of visits would be
 A cold traps in moon
 B north pole of Earth
 C any ancient surface, billions of years old
 D Atlantic ocean
 E New Mexico

38 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 polar ice caps
 D continental drift
 E impact cratering

39 The Hawaiian Islands get smaller as they get older because of ____.
 A islands get hotter and sink into asthenosphere
 B islands get cooler and sink into asthenosphere
 C volcano runs out of energy
 D erosion
 E today's volcanoes more active than 10 million years ago

40 Which has greater mass, a kilogram of feathers or a kilogram of lead?
 A both the same
 B lead
 C feathers
 D impossible to determine

41 Heat can flow from hot to cold by convection. What happens in this process?
 A material moves up and down
 B matter is compressed to high density
 C matter makes light
 D heat goes through solid matter
 E tidal effects stretch matter

42 Half the people of the Earth can see this type of eclipse, so it is very common.

- A annular solar eclipse
- B lunar eclipse
- C total solar eclipse
- D precessional eclipse
- E nutational eclipse

43 Why is lava coming out of a volcano so hot?

- A lava catches fire when it becomes wet
- B lava heated by compression inside volcano
- C Earth is very hot deep inside
- D lava explodes when exposed to air
- E lava heated by magnetic convection in volcano

44 Convection occurs in which of the following parts of the Earth:

- A lithosphere
- B lower mantle
- C asthenosphere
- D crust
- E inner core

45 If a planet is differentiated, what can we deduce about its history?

- A it is totally composed of rocks
- B it had a very strong magnetic field
- C it was liquid at one time
- D its day was much shorter long ago
- E it collided with an asteroid

46 Which has greater density, a pound of feathers or a pound of lead?

- A feathers
- B impossible to determine
- C lead
- D both the same

47 Asteroids can have any shape at all, but planets are almost spherical. This is because asteroids are held together by

- A gravity
- B their rapid rotation
- C their mechanical strength
- D their magnetic fields
- E air pressure

48 Which are the greater risk to the Earth, collisions with asteroids, or with comets?

- A asteroids and comets both the same risk
- B asteroids
- C comets
- D neither pose any risk at all

49 For several hundred years astronomers argued about whether the craters on the moon were due to which two processes?

- A plate tectonics, volcanoes
- B hot spot volcanoes, fissure eruption volcanoes
- C impacts, volcanoes
- D impacts, plate tectonics
- E impacts, lunar erosion

50 NEAR is the name of the first spacecraft to . . .

- A orbit an asteroid
- B discover water on the moon
- C leave the solar system
- D crash into Venus
- E discover life on Mars

>>>

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Answer Sheet: Ast 191-2 Test 2 Dr. Ferland, Spring 2000

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

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1 What caused Apollo 11 to miss its intended landing point by 20 miles?

- A crew became confused about their target
- B mascons
- C faulty rocket
- D crew decided intended landing point was too dangerous
- E lunar rilles

2 The moon's original crust was formed of this type of rock.

- A basalt
- B marble
- C anorthosite
- D limestone
- E breccia

3 This is only way to measure the age of a surface when we can only take pictures, and cannot bring samples back to Earth.

- A count number of craters
- B radioactive dating
- C sedimentary exposure dating
- D cosmic ray exposure
- E all of these

4 When President Eisenhower formed NASA, who did he put in charge of it?

- A the President
- B the Senate
- C the House of Representatives
- D committee of scientists

5 Which of the following is true of sedimentary rocks on the moon?

- A the sedimentary rocks formed 40 billion years ago
- B all moon rocks are sedimentary
- C there are none at all
- D the sedimentary rocks formed in the last 1000 years
- E the sedimentary rocks formed 4.0 billion years ago

6 Radar beams bounced off the surface of Mercury have discovered that the craters near its north and south poles have which of the following?

- A huge shield volcanoes
- B ices inside the craters
- C temperatures as hot as the surface of the sun
- D dried up river beds
- E active cinder cone volcanoes

7 The very center of the solar nebula is where ____ formed.

- A comets
- B the Earth
- C asteroids
- D the sun
- E Jovian planets

8 Which Apollo flight left a memorial to fallen astronauts?

- A 15
- B 8
- C 11
- D 20
- E 25

9 In the "Giant Impact" model of the origin of the Earth's moon, why does the moon have far less iron than the Earth?

- A moon spun too quickly for iron to form
- B impact occurred after Earth differentiated
- C most iron was vaporized
- D Earth's magnetic field held iron here, so moon got little
- E wrong: the moon has more iron than the Earth

10 Billions of years of micrometeorites striking the moon have not build up thick layers of moon dust. What happens to the matter of these micrometeorites?

- A vaporized, escape into space
- B bounce off moon, fly into orbit around sun
- C falls into center of craters
- D melts and sticks to surface
- E pushed away by moon's strong magnetic field

11 Which of the following is youngest?

- A surface of Kentucky
- B seas of the moon
- C highlands of moon
- D planetesimals

12 By counting the number of impact craters on the surface of a planet or moon it is possible to estimate its

- A length of year
- B age
- C mass
- D rotation rate
- E magnetic field

13 Today, the rocky planetesimals which are left over are called

- A Terrestrial planets
- B interlopers
- C asteroids
- D Jovian planets
- E rilles

14 Most of what we know about the moon today came as the result of the ____ missions of Apollo.

- A H
- B L
- C J
- D I
- E P

15 The lunar seas are composed mainly of which type of rock?
 A sedimentary
 B limestone
 C basalt
 D anorthosite
 E unknown

16 Today it costs roughly ____ per pound to put something into low Earth orbit.
 A \$1,000
 B \$10,000
 C \$10
 D \$100
 E \$1

17 The Apollo 15 astronauts visited a rille to find out what caused it. What causes rilles on the moon?
 A continental drift
 B volcanic activity
 C water flow
 D plate tectonics
 E wind erosion

18 How was the mass of Mercury measured for the first time?
 A Kepler's second law
 B Mariner 10 flew past it
 C Kepler's first law
 D Kepler's third law
 E Apollo astronauts landed there

19 These Apollo missions landed near the edges of maria, then drove up into the lunar highlands.
 A The K missions
 B The J missions
 C The I missions
 D The H missions
 E The A missions

20 All of the surface of this planet dates back to the epoch of the heavy bombardment
 A Mercury
 B Earth
 C Jupiter
 D Mars
 E Venus

21 What was the major change in NASA that made the Lunar Orbiter Project and all later space craft so successful?
 A major improvements in rocket technology
 B Johnson became president
 C contracts rewritten to reward success
 D upper administration of NASA changed
 E major improvements in computers

22 If you could have seen the surface of the Earth 4 billion years ago it would have looked like which part of the moon?
 A part with large shield volcanoes
 B highlands
 C rilles
 D maria
 E part with mid-ocean ridges

23 Which planet is only a little bit larger than the Earth's moon, and is covered by craters?
 A Mercury
 B Mars
 C Vulcan
 D Venus
 E Jupiter

24 The fact that the lunar seas are made of basalt was first discovered by chemistry labs on board which of the following spacecraft?
 A Ranger
 B Lunar Orbiter
 C Surveyor
 D Gemini
 E Mercury

25 Which of the following is true of igneous rocks on the moon?
 A all moon rocks are composed of igneous rocks
 B there are none at all
 C they are older than the sedimentary rocks of the moon
 D many were formed in the last 10,000 years
 E many contain small amounts of volatile compounds

26 Ages of rocks on the Earth can be measured using which of the following methods?
 A all of these
 B radioactive dating
 C cosmic ray exposure
 D number of impact craters
 E sedimentary exposure dating

27 Why did Kennedy choose the moon as his national goal?
 A all of these
 B needed a goal so distant that USSR space lead irrelevant
 C military and political setbacks early in his term
 D wanted to establish a central goal for US industry
 E people found space very exciting

28 All of the following were given as reasons for doing the Apollo Project, except which one?
 A fulfill Kennedy's dream
 B study the geology of the moon
 C prove we could do it
 D beat the Russians

29 In the 1950's the USSR had much larger rockets than the USA. Why?

- A USSR had better scientists than USA
- B USSR had no military bases close to USA
- C USSR wanted to explore the planets more than the US
- D USSR wanted to go to Mars before USA
- E USSR wanted to get to Jupiter before USA

30 Accretion, compression, and radioactivity, all cause a planet to ____.

- A have a moon
- B have a magnetic field
- C get hot and melt
- D rotate rapidly
- E have an atmosphere

31 Huge fissure eruption flood basalts created which part of the moon?

- A impact craters
- B highlands
- C maria
- D anorthosite
- E breccia

32 Which part of the moon is pretty much the same today as it was during the epoch of the heavy bombardment?

- A highlands
- B maria
- C rilles

33 The oldest rocks on the moon are roughly how old?

- A 10,000 years
- B 20 billion
- C 6 billion years
- D 4.2 billion years
- E 2 billion

34 Apollo astronauts were trained to look for permanently shadowed regions under rocks. Why?

- A look for ices there
- B soil under rocks is youngest on moon
- C soil under rocks is oldest on moon
- D life may exist under rocks
- E air is found under rocks

35 The best estimate is that the United States government made a profit on the Apollo moon program because of which of the following?

- A production and sales of high technology goods
- B WRONG! We lost money on Apollo.
- C commercial rights to moon rocks and pictures
- D TV rights of moon broadcasts

36 Why was the moon so important in understanding the origin of the solar system?

- A it has an ancient surface
- B it was the first object to form in the solar system
- C it was the last object to form in the solar system
- D it is the only moon in the solar system with craters
- E we can study the history of its magnetic field

37 The epoch of the heavy bombardment was which period of the formation of the solar system?

- A contraction of protosun
- B rotation of solar nebula
- C contraction of Jupiter
- D accretion of planetesimals
- E production of the interstellar medium

38 What causes the "mascons" where the lunar seas are?

- A highlands composed of denser rock
- B seas are composed of denser rock, basalts
- C the rilles are lined with lead
- D large meteorite buried beneath seas
- E the seas are large plates

39 Which of the following will measure an age for an impact breccia on the moon?

- A radioactive dating
- B cosmic ray exposure and radioactive dating
- C cosmic ray exposure
- D no method works

40 The Apollo astronauts had a very difficult time drilling into the moon. Why is the moon so much harder to drill into than the Earth?

- A inner regions of moon are composed of solid granite
- B moon minerals are unlike those of Earth, and much harder
- C soil has had billions of years to compact itself
- D they could not push down hard due to low gravity of moon
- E moon's sedimentary rocks are far harder than Earth's

41 The lunar seas are actually ____.

- A huge lava flows filling large craters
- B regions where moon's magnetic field was very strong
- C regions where water once stood
- D regions where thick layers of dust are found
- E large layers of sedimentary rock

42 The rocks of the moon have been heated to a very high temperature. How do we know this?

- A there is so little iron in the moon
- B the moon has no air
- C there are no volatile elements in moon rocks
- D the moon has the density of rocks on the Earth's surface
- E there is so much iron in the moon

Special codes=101101

Ast 191-1 Test 3 Dr. Ferland,

Spring 2000 Special codes=101101

43 Which part of the solar system is most like a planetesimal?
A the Earth's moon
B terrestrial planets
C Jovian planets
D asteroids
E the sun

44 Rilles on the moon are shaped like what?
A large circles
B elliptical
C triangles
D rivers
E huge mountains

45 This planet was the only one to loose its interior heat before the end of the epoch of the heavy bombardment.
A Mars
B Venus
C Mercury
D Earth
E Jupiter

46 What are most lunar seas shaped like?
A long and thin, like rivers
B long thin ellipses
C square
D round, almost circular
E triangular

47 Which method of measuring ages can only measure the time since a rock solidified?
A radioactive
B seismic wave
C igneomatic dataing
D cosmic ray
E crater density

48 In order to see what rocks from deep inside the moon were like, the Apollo astronauts were trained to try to find these:
A cold traps
B rocks blown out of craters
C rilles
D steep slopes of mountains
E deep canyons

49 On the moon, the "magma ocean" refers to the period when
A moon's magnetic field was created
B rilles formed
C entire moon melted
D lunar seas cracked
E oldest meteorites formed

50 Of the eight major planets, which has the most eccentric orbit?
A Mars
B Jupiter
C Mercury
D Venus
E Neptune

>>>
>>>Did you put 101101 in Special Codes?
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Special Codes= 101101

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Answer Sheet: Ast 191-1 Test 3 Dr. Ferland, Spring 2000

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

Name (Printed) _____

Signature _____

Student Number _____

Seat Number _____

IMPORTANT INSTRUCTIONS:

- => Fill in your name and student number above and on the bubble sheet.
- => VERY IMPORTANT - Enter the number 101101 in the Special Codes section on the bubble sheet.
- => Read the questions carefully!! Watch out for true-false questions with scrabled answers.
- => THE FOLLOWING IS DIFFERENT FROM PREVIOUS EXAMS!!!!
- => THE ENTIRE TEST MUST BE TURNED IN WITH THE BUBBLE SHEET AFTER THE EXAM.
- => If you mark your answers you can grade it yourself by picking up an answer sheet when you are done.

1 The paths followed by the 4 spacecraft now leaving the solar system are carefully monitored. Why?
 A determine mass of the Earth
 B look for 10th planet
 C measure mass of Earth's moon
 D find outer edge of solar system
 E determine distance to nearest star

2 Iron meteorites formed near the center of a differentiated protoplanet. Why does the iron in these meteorites have a crystalline pattern?
 A rapid spinning of protoplanet
 B very slow rate of cooling
 C water present in protoplanet
 D very strong magnetic field
 E amino acids present in protoplanet

3 Apollo 17 visited a landslide from the impact that created the crater Tycho. This is the most recent large impact on the moon, having happened about ____ years ago.
 A 100
 B 10,000
 C 20 billion
 D 4 billion
 E 109 million

4 Of the nine planets of the solar system, the one with many properties least like a true planet is ____.
 A Earth
 B Pluto
 C Saturn
 D Jupiter
 E Mercury

5 On the Earth most of the carbon dioxide produced by volcanoes became ____.
 A oceans
 B polar ice caps
 C rocks
 D the atmosphere
 E impact craters

6 Unlike the Earth, the climate on Mars depends on both its tilt and which?
 A orbit of outer moon
 B volcanic activity
 C orbit of inner moon
 D position of Tharsis Bulge
 E distance to sun

7 Asteroids can have any shape at all, but planets are almost spherical. This is because asteroids are held together by
 A their magnetic fields
 B their mechanical strength
 C gravity
 D their rapid rotation
 E air pressure

8 If Mars had ocean, which of the following would be the continent?
 A southern canals
 B northern plains
 C Tharsis Bulge
 D dried river valleys
 E Valley of the Mariners

9 Which is the closest planet to the Earth, and the easiest one to get to?
 A Mercury
 B Venus
 C Jupiter
 D Mars
 E Saturn

10 The length of time it takes for something to go around on orbit is called the ____.
 A orbital velocity
 B eccentricity
 C period
 D day
 E major axis

11 The Earth is closest to the sun during which month?
 A August
 B January
 C always the same distance from sun
 D April
 E June

12 Which is a major reason that we are so interested in understanding Mars? Understanding ...
 A volcanoes on Earth
 B the origins of life
 C rift valleys on Earth
 D magnetic fields on Earth
 E the epoch of the heavy bombardment

13 Today, the rocky planetesimals which are left over are called
 A Terrestrial planets
 B Jovian planets
 C rilles
 D asteroids
 E interlopers

14 The air near the ground on Venus is dead calm, while Mars is by far the windiest terrestrial planet.
 A true
 B false

15 The giant impact model of the origin of the moon explains all of the following except

A moon rocks have no water in them
 B moon has very little iron
 C moon rocks were heated to a very high temperature
 D moon has highlands and seas
 E Earth's rotation axis titled 23 degrees

16 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 Mars
 B the moon
 C Jupiter
 D the Earth
 E Mercury

17 The Apollo astronauts had a very difficult time drilling into the moon. Why is the moon so much harder to drill into than the Earth?

A inner regions of moon are composed of solid granite
 B moon minerals are unlike those of Earth, and much harder
 C soil has had billions of years to compact itself
 D moon's sedimentary rocks are far harder than Earth's
 E they could not push down hard due to low gravity of moon

18 Viewed from the north pole, the Earth rotates in which direction?

A none of these
 B counterclockwise
 C clockwise
 D all of these

19 The study of Venus was very important to humans because it taught us about

A nuclear winter
 B the origin of the Earth's moon
 C the Earth's magnetic field
 D atmospheres and greenhouse effects
 E how the sun formed

20 Wind and water erosion create which type of rocks?

A precessional
 B lava
 C igneous
 D sedimentary
 E magma

21 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 Earth
 B they appeared on Earth after 2 billion years
 C they are the most common life form on Mars
 D they are attracted to stars
 E they were found in meteorites

22 Ancient peoples felt that the stars and constellations were comforting and a source of security, because

A the constellations made religious symbols
 B they knew most stars are bigger than sun
 C they did not change over thousands of years
 D they are only visible at night
 E they thought stars were in the Earth's air

23 Near the center of a Jovian planet like Jupiter water is found as solid ice. The temperature is close to

A 5,000F
 B -200F
 C 500F
 D 0F
 E 50,000F

24 Titan is a moon orbiting which planet?

A Mars
 B Saturn
 C Neptune
 D Jupiter
 E Uranus

25 The gas in the solar nebula formed small solid bodies which were later pulled together by gravity to make the planets. These small solid bodies were called

A proto-comets
 B planetesimals
 C small bodies
 D Jovianoids
 E plagues

26 Land tides are a stretching of the Earth's crust by roughly how much?

A 500 miles
 B 1/1000 inch
 C 36 miles
 D one mile
 E one foot

27 The inner core is the hottest place in the Earth. The outer core is cooler. Which core is liquid, which solid?

A both liquid
 B both solid
 C we do not know if liquid or solid
 D inner solid, outer liquid
 E inner liquid, outer solid

28 What is the source of the internal heat that makes some moons of Jovian planets very hot inside?

A compression
 B impacts and accretion
 C radioactive decay
 D heat of formation
 E tidal stretching

29 What causes the "mascons" where the lunar seas are?

- A seas are composed of denser rock, basalts
- B large meteorite buried beneath seas
- C the rilles are lined with lead
- D the seas are large plates
- E highlands composed of denser rock

30 The two most common elements in a Jovian planet are

- A hydrogen and helium
- B carbon and oxygen
- C neon and sulfur
- D nitrogen and hydrogen
- E argon and neon

31 If our solar system has been visited by extraterrestrials 100 times in the past 5 billion years, on a regular basis, how many years is it between visits?

- A 50 billion
- B 500,000
- C 50,000
- D 5 billion
- E 50 million

32 Although Venus is hot during the daytime near the equator, it is cool at night and near the poles.

- A true
- B false

33 Which is true about the continents on Venus?

- A nothing is known about continents on Venus
- B there are no continents on Venus
- C there are two small ones
- D there are six very large ones
- E the whole surface is one large continent

34 Which are the greater risk to the Earth, collisions with asteroids, or with comets?

- A neither pose any risk at all
- B asteroids
- C asteroids and comets both the same risk
- D comets

35 Where do large mountains tend to occur on the moon?

- A at north pole
- B at mid-ocean ridges
- C at edges of plates
- D near rilles
- E at edges of maria

36 What would people need to do to terraform Venus?

- A melt ices below surface
- B produce strong magnetic field
- C speed up its rotation
- D remove lots of its atmosphere
- E create lots more atmosphere

37 No impact crater was created in the Tunguska Event. Why?

- A asteroid exploded high in Earth's atmosphere
- B meteorite landed in water
- C meteorite missed the Earth
- D crater was weathered away
- E black hole exploded high in Earth's atmosphere

38 When the Voyager spacecraft got a good look at Titan, it discovered that Titan is covered by

- A impact craters
- B huge mountains
- C a thick layer of clouds
- D volcanoes
- E craters

39 The gravity of the sun does which of the following?

- A causes moon to have phases
- B moon holds solar system together
- C makes Earth spin, causing day and night
- D continents drift on the Earth
- E holds solar system together

40 What caused the "canals" of Mars seen by 19th century astronomers?

- A large geological faults
- B drainage from polar caps
- C optical illusion
- D ancient Martians dug them
- E dried up river beds

41 Where is most of the carbon dioxide on Mars?

- A on surface of polar caps
- B under ground as ice
- C in the core of Mars
- D in lakes of liquid carbon dioxide
- E in clouds near equator

42 The spacecraft that visited Mercury carried a large umbrella, covered by mirrors. What was its purpose?

- A send solar power back to Earth
- B reflect meteors before they struck spacecraft
- C send radio signals back to Earth
- D produce solar energy
- E reflect heat of the sun before it struck spacecraft

43 Jovian planets have lots of moons. Where did they come from?

- A formed with the planet
- B captured asteroids
- C blown out of the sun
- D torn off during major collision
- E captured comets

44 If you take a long exposure picture of the night time sky, the stars will appear as streaks because of the Earth's
 A magnetic field
 B continental drift
 C revolution around sun
 D rotation on its axis
 E mass

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 eclipse our moon
 B transit the sun
 C cross Venus' orbit and hit it
 D produce total eclipses of the sun
 E hit the sun due to its eccentric orbit

46 The Earth has no mountains more than 5 miles high, while Mars has one nearly 20 miles high. What does this tell us about the interior of Mars?
 A no polar caps
 B probably solid throughout
 C no iron core
 D no lithosphere
 E large iron core

47 How was the mass of Mercury measured for the first time?
 A Kepler's first law
 B Mariner 10 flew past it
 C Apollo astronauts landed there
 D Kepler's third law
 E Kepler's second law

48 The region of the Earth called the ____ cracked into roughly a dozen plates.
 A inner core
 B asthenosphere
 C outer core
 D lower mantle
 E lithosphere

49 The present atmosphere of the Earth, the air we breath, is referred to as the Earth's ____ atmosphere.
 A secondary
 B precessional
 C primitive
 D initial
 E tertiary

50 Most of the mass in a Jovian planet is in which of the following forms?
 A liquid helium
 B solid iron
 C gaseous hydrogen
 D liquid iron
 E liquid hydrogen

51 An eclipse of the sun that occurs when the moon is furthest away from the Earth is called a(n) ____ eclipse.
 A total solar
 B secular solar
 C annular solar
 D secular lunar
 E annular lunar

52 Rilles on the moon are shaped like what?
 A triangles
 B elliptical
 C huge mountains
 D large circles
 E rivers

53 Strong gravity slows down time and warps space. What does that do to Mercury?
 A causes impact craters on its surface
 B destroys its magnetic field
 C explains its slow rotation rate
 D puts ice in the cold traps
 E distorts its orbit

54 Which of the following is probably true about volcanoes on Mars?
 A only cinder cone volcanoes
 B there are extinct volcanoes
 C there are no volcanoes
 D covered with active volcanoes
 E only fissure eruption volcanoes present

55 What distinguishes a flood basalt type of volcano from the others discussed?
 A flood is composed entirely of water
 B floods a very wide area
 C builds a very high mountain
 D exerts stronger than expected tidal pull on moon
 E has a very strong magnetic field

56 The Earth is a differentiated planet. What was measured to tell us that?
 A precession
 B rotation rate
 C temperature
 D craters on surface
 E density

57 During Mars' Middle Period, its climate was
 A much hotter than the Earth's
 B a lot like the Earth's is today
 C much cooler than the Earth's
 D the same as it is today

58 Any life found on Titan would be based on liquid __, not liquid water like here on Earth.

- A carbon dioxide
- B methane
- C ammonia
- D nitrogen
- E argon

59 Most of the mass of a Jovian planet actually came from

- A primitive atmosphere in solar nebula
- B the Earth
- C the sun
- D asteroids from the asteroid belt
- E rocky planetesimals

60 Which of the following planets would be relatively easy to terraform?

- A Mars
- B Pluto
- C Mercury
- D Jupiter
- E Venus

61 Which has greater density, a pound of feathers or a pound of lead?

- A impossible to determine
- B both the same
- C lead
- D feathers

62 Which of the terrestrial planet has had little geological activity since the epoch of the heavy bombardment?

- A Jupiter
- B Earth
- C Mars
- D Venus
- E Mercury

63 A hundred years ago astronomers thought there was a small planet very close to the sun called ____.

- A Vulcan
- B Pluto
- C Charon
- D Ganymede
- E Titan

64 If you were to stand on the surface of Venus what would you see?

- A it is not known
- B very foggy, only see for a few feet
- C clear air, very dark and gray everywhere
- D clear air, cloudy sky, everything looks orange
- E very foggy, always very dark

65 What does the moon look like in the middle of a lunar eclipse, when it is in the shadow of the Earth?

- A completely invisible
- B like normal first quarter moon
- C bright blue color
- D like normal full moon, bright white circle of light
- E very red color

66 Which of the following was the first to happen after the magma ocean formed on the moon?

- A anorthositic crust solidified
- B moon's atmosphere formed
- C moon's oceans of sea water formed
- D seas formed
- E rilles formed on the seas

67 If all life ceased on the Earth, in a few hundred years there would be no __ left in our atmosphere, but there would be lots of ____.

- A oxygen, nitrogen
- B oxygen, carbon dioxide
- C nitrogen, oxygen
- D carbon dioxide, oxygen
- E water, oxygen

68 Where did the Earth's secondary atmosphere come from?

- A volcanoes
- B plate tectonics
- C solar nebula
- D protosun
- E giant impacts of asteroids

69 Which of the following is true of the four spacecraft now leaving the solar system?

- A will slow down to a dead stop in space
- B they will continue on for billions of years
- C will fall back to Earth in a few million years
- D will fall into the sun
- E will fall back to Earth in a few hundred years

70 The Tharsis Bulge on Mars is a ____.

- A continent
- B ocean floor
- C river valley
- D large shield volcano
- E rift valley

71 On a scale model where the Earth is a basketball, the sun is the size of a __ about __ away.

- A penny, 3 feet
- B person, 5 feet
- C baseball, 2 feet
- D baseball, 10 yards
- E basketball court, 2 miles

72 The study of Martian dust storms lead to the discovery of which of the following?

- A ice ages on the Earth
- B the KT catastrophe
- C dried up Martian river beds
- D Nuclear Winter
- E polar ice caps

73 When the Moon is in its first quarter phase;

- A it is about 2 weeks after new moon
- B we see only the night time hemisphere
- C 50 percent of its surface is in sunlight
- D it is about 3 weeks after new moon
- E its surface is all in sunlight

74 If we encounter an alien civilization which is only 10% older than life here, they would be ____ years ahead of us, since Earth's life is about 4 billion years old.

- A half a million
- B 10,000
- C 1000
- D half a billion
- E 100

75 It is now possible to send spacecraft to all the planets of the solar system, but it is unlikely that spacecraft will go to other stars in our lifetime.

- A false
- B true

76 What must astronomers do if they want to look at the universe in x-ray, gamma-ray, or ultraviolet light?

- A use reflecting rather than refracting telescope
- B get telescopes above Earth's atmosphere
- C use refracting instead of reflecting telescope
- D make telescope's magnification very large
- E make telescope's aperture very large

77 How does the temperature swing from night to day on Mars compare with the range in temperatures over one day here in the Earth?

- A smaller on Mars
- B temperature always the same on Mars
- C much larger on Mars
- D Earth and Mars about the same
- E Mars has largest temperature swing in the solar system

78 People are very interested in examining any ices found in cold traps so that we can better understand

- A the formation of the Earth's moon
- B the formation of the proto-sun
- C the formation of impact craters
- D the origins of life
- E the formation of Pluto

79 We have used spacecraft to visit other stars and their solar systems

- A false
- B true

80 On Titan methane can be found as

- A a liquid
- B solid, liquid, and gas
- C a solid
- D WRONG - there is no methane on Titan
- E a gas

81 Which of the following will measure an age for an impact breccia on the moon?

- A cosmic ray exposure and radioactive dating
- B radioactive dating
- C no method works
- D cosmic ray exposure

82 What melted the chondrules in carbonaceous chondriote meteorite?

- A strong compression
- B intense radioactivity
- C strong magnetic field
- D accretion
- E rapid rotation

83 For many years people thought that the moon's impact craters were caused by

- A dinosaur tracks
- B volcanoes
- C rivers
- D collisions by large planets
- E plate tectonics

84 On which moons or planets is it thought possible to have cold traps?

- A Venus
- B our moon
- C Mercury and our moon
- D Mars
- E Earth

85 Mars is a very windy planet. What causes these high winds?

- A the large tilt of the rotation axis
- B the rapid rotation
- C the polar ice caps
- D large change in temperature when sun sets
- E the two moons

86 The very center of the solar nebula is where ____ formed.

- A the Earth
- B Jovian planets
- C asteroids
- D comets
- E the sun

87 Which of the following planets are within the "zone of life", where a planet with the Earth's atmosphere would have liquid water on its surface?

- A Venus, Mars
- B Mercury, Venus
- C Venus
- D Mars
- E Mars, Jupiter

88 On the Earth the low ocean floors are basalt and the continents are granite. On Venus the low rolling plains are ___ and the continents are ___.

- A basalt, basalt
- B sedimentary rocks, granite
- C granite, basalt
- D basalt, granite
- E granite, granite

89 This project produced the extensive maps of the moon used to decide where Apollo would land.

- A Viking
- B Surveyor
- C Lunar Orbiter
- D Ranger
- E Mercury

90 Precession causes which of the following to change?

- A direction of north pole of the Earth
- B length of our year
- C length of our day
- D distance to the moon
- E distance to the sun

91 If you drew the shapes of the orbits of the eight major planets, they would appear most like a(n)

- A straight line
- B box
- C circle
- D very eccentric ellipse

92 If a spacecraft brings a sample of the moon back to the Earth, its age can be measured by which of these methods?

- A only cosmic ray exposure
- B only breccia melt method
- C only radioactive dating
- D radioactive dating, cosmic ray exposure
- E only rille exposure

93 The moon's original crust was formed of this type of rock.

- A limestone
- B marble
- C basalt
- D breccia
- E anorthosite

94 The results of micro-meteorite impact are very seldom seen on the Earth. Why?

- A their craters are eroded away by wind and water
- B they create volcanic hot spots in the mantle
- C they are deflected by Earth's magnetic field
- D they don't get through our atmosphere
- E most land in the oceans

95 The "Age of Aquarius" refers to which of the following?

- A sun in Aquarius on autumnal equinox
- B sun in Aquarius on Jan 1
- C sun in Aquarius on summer solstice
- D sun in Aquarius on winter solstice
- E sun in Aquarius on first day of spring

96 It is possible that there is life on Europa because of its

- A microfossils found inside meteorites
- B strong magnetic field
- C warm surface temperature
- D liquid water under visible surface
- E thick nitrogen atmosphere

97 Which type of meteorite has amino acids present in them?

- A pallasites
- B irons
- C achronondrites
- D stones
- E carbonaceous chondrites

98 Convection is when heat flows by

- A precession of Earth's axis
- B magnetic fields
- C electric fields
- D nutation
- E material moving

99 If you saw a Jovian planet before it accreted its massive primitive atmosphere, what would it look like?

- A big terrestrial planet
- B very small asteroid
- C comet
- D smaller Jovian planet
- E a lunar sea

100 Which of the following types of meteorites came from the core of a differentiated proto-planet?

- A stone
- B carbonaceous chondrite
- C iron-nickel
- D trolandian magnetite

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>>>Did you put 101101 in Special Codes?

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Special Codes= 101101

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Answer Sheet: Ast 191-1 Test 4 Dr. Ferland, Spring 2000

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