

FAMILY NAME : \_\_\_\_\_  
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GIVEN NAME : \_\_\_\_\_  
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Signature: \_\_\_\_\_

## ASTRONOMY 4

DeAnza College  
Winter 2017

Second Midterm Exam

**MAKE ALL MARKS DARK AND COMPLETE.**

### Instructions:

1. On your Parscore sheet (using a #2 pencil):
  - a. Write and fill in the bubbles for your 8-digit ID number. Leave the right-most two columns blank.
  - b. Write and bubble in your name in LastName FirstName form (i.e. family name then given name separated by a space). Don't leave any blank spaces on the left.
  - c. Leave blank: areas for phone number, exam number, test form, and code.
2. Please print your name and sign your name in the appropriate spaces at the top of this page.
3. **This is a closed-book, closed-notes exam. No reference materials of any kind are to be used during the exam.**
4. Your exam should have five pages (including this one).  
Please check to make sure that it does.
5. Mark your answers on this booklet as well as filling in the bubbles on your Parscore sheet.
6. Turn in your Parscore sheet inside your exam booklet.

Good luck.

- A. What is the saros cycle?
- T F 1) It is the time it takes for the Moon to go through one cycle of its phases.
  - T F 2) It is the time for the pattern of lunar and solar eclipses to repeat.
  - T F 3) It is the time from one lunar perigee to the next one.
- B. Why does the Moon show phases during the course of a month?
- T F 4) The Earth's shadow falls on the Moon to different degrees as the Moon goes around.
  - T F 5) The angle between our lines of sight to the Moon and Sun changes and we see differing amounts of reflected sunlight from the Moon.
  - T F 6) The Moon shines by light reflected from the Earth, so it looks different depending on whether it's day or night on the side of the Earth facing the Moon.
- C. If you looked back at the Earth from the Moon when the Moon was in its first quarter phase, what phase would the Earth appear to be in?
- T F 7) first quarter
  - T F 8) third quarter
  - T F 9) waxing gibbous
  - T F 10) The Earth doesn't have phases, so this is a meaningless question.
- D. Which of the following is/are true about the Moon's sidereal and synodic periods?
- T F 11) The sidereal period is the time it takes the Moon to go through one cycle of its phases.
  - T F 12) The synodic period is the same as a "lunation".
  - T F 13) The synodic period is the time it takes for the Moon to go from one total lunar eclipse to the next total lunar eclipse.
  - T F 14) The sidereal and synodic periods are the same thing.
- E. What conditions are necessary for a lunar or a solar eclipse to occur?
- T F 15) A lunar and a solar eclipse can only happen at new moon.
  - T F 16) A lunar and a solar eclipse can only happen at full moon.
  - T F 17) A lunar eclipse can only happen at full moon.
  - T F 18) Solar eclipses only happen if the Moon goes between Earth and the Sun.
- F. What is the Solar Nebula Theory?
- T F 19) It is the proposal that the Sun's energy comes from a cloud of plasma around it.
  - T F 20) It is the proposal that the universe formed from a huge explosion.
  - T F 21) It is the proposal that the planets formed from the same cloud of gas and dust that formed the Sun.
  - T F 22) It predicts that planet formation is a natural part of star formation and not due to catastrophic events.
- G. According to the Solar Nebula theory, how was the solar nebula cleared away?
- T F 23) When the sun became luminous enough, the gas and dust were blown away into space.
  - T F 24) It all eventually became incorporated into planets.
  - T F 25) It was never cleared away.

- H. Which of the following is/are true about the Kepler Space Telescope?
- T F 26) It was designed to search for evidence of exoplanets.
  - T F 27) It was designed to search for evidence of planets orbiting around other stars.
  - T F 28) It was designed to replace the Hubble Space Telescope.
- I. Which of the following is/are true about the Kepler mission?
- T F 29) It has discovered thousands of exoplanets.
  - T F 30) It has detected only about ten exoplanets, all much bigger than Earth.
  - T F 31) It has searched the entire sky for nearby stars that might have planets.
- J. Which of the following was/were used in the Kepler project to discover exoplanets?
- T F 32) The “wobble” method.
  - T F 33) The “transit” method.
  - T F 34) Detecting very small changes in a star’s brightness.
- K. Which of the following is/are true about the Earth’s shadow?
- T F 35) It is responsible for lunar eclipses.
  - T F 36) The darkest part is called the umbra.
  - T F 37) The darkest part is called the penumbra.
  - T F 38) The darkest part is called the umbrella.
- L. An "annular eclipse"
- T F 39) is an eclipse in which the Moon covers only the central part of the Sun, leaving a ring (or "annulus") of bright light around the Moon's silhouette.
  - T F 40) occurs once a year.
  - T F 41) cannot happen if the Moon is at perigee.
  - T F 42) cannot happen if the Moon is at apogee.
- M. Which one(s) of the following describe a situation in which the Moon can be seen in the daytime?
- T F 43) first quarter moon at 9 a.m.
  - T F 44) full moon at noon
  - T F 45) third quarter moon at 9 a.m.
  - T F 46) waxing crescent moon just before sunrise.
- N. What is a planetesimal?
- T F 47) “Planetesimal” is another word for a satellite (moon) going around a planet.
  - T F 48) It was a small body that formed from the solar nebula and eventually grew into a proto-planet.
  - T F 49) It is a disk of dusty material seen in Hubble Space Telescope pictures of nearby stars.
  - T F 50) “Planetesimal” is another word for particles that escape from the solar system.

- O. Which of the following is/are true about the moon?
- T F 51) The first quarter moon is highest in the sky at about sunset.
  - T F 52) The full moon is highest in the sky at about midnight.
  - T F 53) The third quarter moon rises at about midnight.
  - T F 54) When the moon rises or sets or is highest in the sky does not depend on its phase.
- P. What phase(s) of the moon come(s) between Waxing Gibbous and the next Waning Crescent?
- T F 55) third quarter.
  - T F 56) full.
  - T F 57) waning gibbous.
  - T F 58) waxing crescent.
- Q. What is the "angular momentum problem"?
- T F 59) According to the nebular hypothesis, the Sun should have most of the angular momentum of the Solar System, but it doesn't.
  - T F 60) According to the nebular hypothesis, the planets should have most of the angular momentum of the Solar System, but they don't.
  - T F 61) The Moon should be rotating and revolving faster than it is.
- R. What evidence do we have that disks of gas and dust are common around young stars?
- T F 62) Such disks are observed directly in many cases (for example, by the Hubble Space Telescope).
  - T F 63) Numerical simulations ("computer models") predict them, but our technology isn't capable of detecting them directly yet.
  - T F 64) There is no such evidence.
- S. Which of the following is/are true concerning systematic differences between Terrestrial and Jovian planets?
- T F 65) Terrestrials are all smaller than Jovians.
  - T F 66) Terrestrials are all closer to the Sun than the Jovians are.
  - T F 67) Terrestrials all have lower densities than Jovians do.
  - T F 68) Terrestrials all orbit the Sun faster than Jovians do.
- T. Which of the following is/are Jovian planets?
- T F 69) Neptune
  - T F 70) Jupiter
  - T F 71) Earth
  - T F 72) Uranus
  - T F 73) Venus
  - T F 74) Saturn
- U. Which of the following is/are true about the terms *rotation* and *revolution*?
- T F 75) *Rotation* means orbiting around something else
  - T F 76) *Revolution* means orbiting around something else
  - T F 77) The Earth's *revolution* period is one day
  - T F 78) The two terms mean the same thing.

- V. The term "retrograde" refers to
- T F 79) a planet which appears to be moving in its usual direction against the background of the stars.
  - T F 80) a planet which appears to be moving in the opposite direction from the way it usually does.
  - T F 81) a planet that is neither Terrestrial nor Jovian.
  - T F 82) a planet that is older than the rest of the solar system.
- W. Galileo used his observations of the changing phases of Venus to demonstrate that
- T F 83) the Sun moves around the Earth.
  - T F 84) the Universe is infinite in size.
  - T F 85) the Earth is a sphere.
  - T F 86) the Moon orbits around the Earth.
  - T F 87) Venus follows an orbit around the Sun rather than around the Earth.
- X. If we see a galaxy about two million light years away from us, then
- T F 88) we are seeing it as it was about two million years ago (not as it is right now).
  - T F 89) it is closer to us than most galaxies are.
  - T F 90) it is one of the most distant galaxies that we can detect with current technology.
- Y. Which of the following can be seen from Northern California on a clear, dark Winter night at around 8pm?
- T F 91) the constellation Orion (the Hunter)
  - T F 92) the star Sirius
  - T F 93) the constellation Taurus (the Bull)
- Z. Which of the following is/are regularities that the major planets in our solar system share?
- T F 94) They all orbit in about the same plane.
  - T F 95) They all orbit in the same direction.
  - T F 96) They are all made mostly of hydrogen and lithium.
  - T F 97) They are all made mostly of rock and metal.
- AA. The notion that the Earth goes around the Sun rather than vice versa is
- T F 98) called "geocentric".
  - T F 99) called "heliocentric".
  - T F 100) what Kepler thought was true.

**END OF TEST. PLEASE TURN IN YOUR PARSCORE SHEET INSIDE THIS EXAM BOOKLET.**