

Introduction to Astronomy—Study Guide

INSTRUCTIONS: **Make sure that your first and your last name and date appear at all applicable locations, yes, even the first page.** This examination is in the form of multiple choice and a few fill in the blank questions/statements. After reading the question or instructions carefully, select your answer(s) and mark it (or them) plainly on the answer sheet provided with this test. The answer sheet can be found at the end of the exam. You may detach it. Only answer the odd or even questions depending upon whether your exam number is odd or even. **Take a moment to circle the questions which are your questions throughout the exam.** You may work alone or with **ONE PARTNER** who is taking the other portion of the exam to help each other attain a higher grade. **There will be no communications between teams.** All correct answers must be provided to receive full credit; however, partial credit will be given unless stated otherwise. This exam has a total value of 50 points. **MUCH SUCCESS!!!**

CANVAS INSTRUCTIONS: This Quest is in the form of multiple-choice questions and a few fill-in-the blanks. After reading the question carefully, select your answer or answers. **If the question calls for multiple answers, two or more, you must provide all answers and all answers must be correct.** Canvas does not allow for partial credit. Because of this, I will give you two attempts to take the test. Consider this open book. All answers can be found in the lecture material created in class, the assigned reading material, and the PowerPoint presentations, but if you feel the need to consult online sources, books, or magazines, please feel free to do so. This Quest has a total value of 20 points. **MUCH SUCCESS!!!**

INTRODUCTORY MATERIAL

1. Astronomy is the science which investigates...
Key Concept: Know the definition of the subject that you are studying.
2. The most important idea in the famous Einstein equation, $E = mc^2$ says
Key Concept: Understand the equation in its distilled form, without the constant.
3. If the Andromeda Galaxy is 2.4 million light years away, it means that
Key Concept: What is a light year and how does the speed of light affect our perception of the universe?
4. Two Uranium 238 atoms (they are radioactive and really isotopes) are on a bad date and after a few hours they decide to split. In order to accomplish this feat, they would need the help of
Key Concept: Understand the four fundamental forces of nature.
5. Astronomically speaking, plasma could be described as
Key Concept: Recognize the four states of matter.

6. The theory which currently gives the best predicted fit for the beginning of the evolution of the universe is the
[Key Concept: Distill the most accepted theory for the evolution of the universe...](#)
7. The basic manner in which visible matter organizes or “clumps” together within the universe is called a
[Key Concept: Basic organizational structure of the universe...](#)
8. In our universe, what we see is not necessarily reality because
[Key Concepts: The speed of light is not infinite. Most of the universe is different from what we perceive it to be.](#)
9. A black hole is really
[Key Concept: Know what a black hole in space represents.](#)
10. The visible universe that we observe today is essentially composed of two elements. Pick the two correct ones that are named below.
[Key Concept: What is the basic chemical makeup of the baryonic universe.](#)
11. The Earth _____ around the sun in a period of approximately _____ day(s)/hour(s). **The letters on your answer sheet must be in their correct order.**
[Key Concepts: Investigate the two basic motions of the Earth and the time intervals to complete these motions, as well as the day and the year.](#)
12. The Earth _____ about its axis in _____ day(s)/hours(s)/minute(s). **The letters on your answer sheet must be in their correct order.**
[Key Concepts: Investigate the two basic motions of the Earth and the time intervals to complete these motions, as well as the day and the year.](#)
13. A day on the Earth is equal to _____ day(s)/hour(s)/minute(s).
[Key Concepts: Investigate the two basic motions of the Earth and the time intervals to complete these motions, as well as the day and the year.](#)
14. A year on the Earth is equal to _____ day(s)/hour(s)/minute(s).
[Key Concepts: Investigate the two basic motions of the Earth and the time intervals to complete these motions, as well as the day and the year.](#)
15. Which words below have nothing to do with the familiar electromagnetic spectrum energies that travel at the speed of light?
[Key Concept: Know the electromagnetic spectrum and its different parts.](#)

16. The distance from the Earth to the sun, is approximately 93 million miles or 149 million kilometers. If this distance is being used to calculate the relative amount of solar radiation falling upon other worlds like Mercury or Pluto, we could say that Earth is receiving how many units of solar energy. Think of the inverse square rule to solve this problem.
Key Concepts: Understand relative units and their implication to the Inverse square law.
17. How luminous will the sun appear from the planet Saturn in comparison to the sun's brightness as seen from the Earth? Saturn is about 10 astronomical units from the sun.
Key Concept: Understand the inverse square law.
18. If it were possible to step back and look at the universe in its entirety, we would observe
Key Concept: Understand the basic structure of the universe.
19. It can be argued that the universe began from something less than a "Big Bang," because
Key Concept: Understand the basic differences between the "Big Bang" and the "Big Pop" concepts.
20. If a solid, liquid or a gas is compressed, the material will become (think temperature).
Key Concept: Have a basic knowledge of the perfect gas laws, i.e. the Fahrenheit 451 experiment that was conducted in class.
21. If a solid, liquid, or a gas is rarefied, the substance will become (think temperature).
Key Concept: Have a basic knowledge of the perfect gas laws, i.e. the inverted air can that was used to demonstrate this principal.
22. Remember the can of air? Why was the gas that came from the can so cold?
Key Concept: Understand what happens with respect to temperature when a solid, liquid, or gas rapidly expands.
23. Why did the cotton combust (burn) in the Fahrenheit 451 experiment? (two answers)
Key Concept: Understand what happens with respect to temperature when a solid, liquid, or gas is rapidly compressed.
24. Why are low-lying, desert places like Death Valley, located in western California, able to achieve such high temperatures during the summer months? Death Valley holds the all-time record for the highest temperature ever recorded on Earth, 134 degrees Fahrenheit. Death Valley is located in the Northern Hemisphere which is farther away from the sun in the summertime. Everything that has been said about Death Valley is true. Pick the best two answers that address why Death Valley is so hot.
Key Concept: Understand the relationship of temperature to evaporation and compression of a gas.
25. Why is the Big Dipper not an official constellation (two answers).
Key Concept: Understand the difference between a constellation and an asterism.

26. What is the brightest star in the group of stars mentioned below.

[Key Concept:](#) Understand a misconception regarding the star Polaris.

The End is Here!

Updated on February 25, 2021