

DSST® ASTRONOMY

EXAM INFORMATION

This exam was developed to enable schools to award credit to students for knowledge equivalent to that learned by students taking the course. This examination includes celestial mechanics; celestial systems; astronomical instruments; the solar system; nature and evolution; the galaxy; the universe; determining astronomical distances; and life in the universe.

The exam contains 100 questions to be answered in 2 hours.

EXAM CONTENT OUTLINE

The following is an outline of the content areas covered in the examination. The approximate percentage of the examination devoted to each content area is also noted.

I. Introduction to the Science of Astronomy – 5%

- a. Nature of science
- b. How scientists think and work
- c. History of early astronomy

II. Cosmic Forces - 15%

- a. Motion
- b. Energy
- c. Gravity
- d. Relativity

III. Celestial Systems – 10%

- a. Earth and the sky
- b. Earth and the Moon
- c. Time and the calendar

IV. The Science of Light – 10%

- a. The electromagnetic spectrum
- b. Measurement and analysis of light

V. Planetary Systems: Our Solar System and Others– 15%

- a. Contents of our solar system
- b. Formation and evolution of planetary systems
- c. Exoplanets

VI. The Sun and Stars: Nature and Evolution – 15%

- a. Our Star, the Sun
- b. Measuring the properties of stars
- c. Birth, life and death of stars

VII. Our Galaxy and Other Galaxies: Contents and Structure – 15%

- a. Our Galaxy: The Milky Way
- b. Other galaxies and galaxy clusters
- c. Cosmic Distances

VIII. The Universe: Contents, Structure, and Evolution – 10%

- a. Large-scale structure
- b. The Big Bang
- c. The evolution and fate of the Universe

IX. Life in the Universe – 5%

- a. The extremes of life on earth
- b. Life in the solar system?
- c. Life beyond the solar system?

REFERENCES

Below is a list of reference publications that were either used as a reference to create the exam, or were used as textbooks in college courses of the same or similar title at the time the test was developed. You may reference either the current edition of these titles **or** textbooks currently used at a local college or university for the same class title. It is recommended that you reference **more than one textbook** on the topics outlined in this fact sheet. You should **begin by checking textbook content against the content outline** provided **before** selecting textbooks that cover the test content from which to study.

Sources for study material are suggested but not limited to the following:

1. Bennett, J.O., Donahue, M.O., Schneider, N., Voit, M. (2013). *The Essential Cosmic Perspective*. Addison-Wesley, 6th Ed.
2. Freedman, R., Geller, R., Kaufmann, W.J. (2010). *Universe*. 9th Ed.
3. Hester, J., Smith, B., Blumenthal, G., Kay, L., Voss, H. (2010). *21st Century Astronomy*. 3rd Ed
4. Seeds, M., Backman, D. (2012). *Foundations of Astronomy*. Cengage Learning, 12th Ed.

SAMPLE QUESTIONS

All test questions are in a multiple-choice format, with one correct answer and three incorrect options. These are samples of the types of questions that may appear on the exam. Other sample questions can be found in the form of practice exams by visiting our website at www.getcollegedcredit.com/testprep.

DSST EXAM CONTENT FACT SHEET – ASTRONOMY

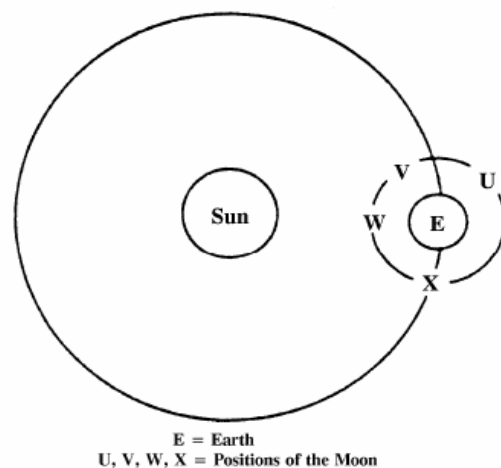
Questions on the test require test takers to demonstrate the following abilities. Some questions may require more than one of the abilities.

- Knowledge of basic facts and terms (about 45 - 50% of the examination)
- Understanding of concepts and principles (about 40 - 45% of the examination)
- Ability to apply knowledge to specific cases or issues (about 5 - 10% of the examination)

1. In the northern hemisphere, the vernal equinox is the position occupied by the Sun on the first day of
 - a. summer
 - b. fall
 - c. spring
 - d. winter
2. Which of the following is the best illustration of Newton's third law?
 - a. A skater coasting across the ice
 - b. The spinning of a top
 - c. The swinging of a pendulum
 - d. The recoil of a shotgun
3. The energy in the interior of a white dwarf is transported outward in the same fashion as the energy is transmitted
 - a. in an airplane shockwave
 - b. from an electric oven
 - c. from a hot-air furnace
 - d. from tip to handle of a hot poker
4. The most important advantage of a large telescope aperture is that it
 - a. allows a large amount of radiation to be collected
 - b. gives a higher magnification of the objects observed
 - c. is less affected by the trembling of the Earth's atmosphere
 - d. produces a larger diffraction ring when distant stars are observed
5. Which of the following statements is true about the steady-state cosmology?
 - a. It explains the isotropic nature of the remnant radiation from a giant fireball.
 - b. It appears to violate the law of conservation of matter in empty space.
 - c. It predicts a negative value for the Hubble Constant.
 - d. It explains the galactic red shifts as gravitational effects.
6. The bending of rays of light as they pass from one transparent medium into another is called
 - a. reflection

- b. diffraction
- c. dispersion
- d. refraction

7. Which of the following planets has been observed to have extensive Van Allen belts similar to those of Earth?
 - a. Mercury
 - b. Mars
 - c. Jupiter
 - d. Venus
8. At the present time in the Sun's lifetime, the major source of the Sun's energy lies in
 - a. electron-proton collisions
 - b. gravitational contraction
 - c. nuclear fusion
 - d. matter-antimatter annihilation
9. The fact that most stars observed are on the Main Sequence implies that a star spends the greatest proportion of its lifetime
 - a. contracting to reach the Main Sequence
 - b. as a giant off the Main Sequence
 - c. expanding to reach the Main Sequence
 - d. on the Main Sequence
10. The Universe as we know it began its existence as a hot, dense cloud of matter and radiation approximately how many years ago?
 - a. 5 billion
 - b. 15 billion
 - c. 50 billion
 - d. 100 billion
11. Where is the Moon when there are spring tides on Earth?



- a. U
- b. V
- c. W
- d. X

CREDIT RECOMMENDATIONS

The American Council on Education's College Credit Recommendation Service (ACE CREDIT) has evaluated the DSST test development process and content of this exam. It has made the following recommendations:

Area or Course Equivalent	Astronomy
Level	Lower-level baccalaureate
Amount of Credit	Three (3) semester hours
Minimum Score	400
Source	American Council on Education – College Credit Recommendation Service

Answers to sample questions: 1-C; 2-D; 3-D; 4-A; 5-B; 6-D; 7-C; 8-C; 9-D; 10-B; 11-C.

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