

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 history of the Science of Astronomy, Astrophysics, Celestial Systems, the Science of Light, Planetary Systems, Nature and Evolution of the Sun and Stars, Galaxies and the Universe.

The exam contains 100 questions to be answered in 2 hours. Some of these are pretest questions that will not be scored.

Form Codes: SQ500, SR500

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: 3 Lower Level Baccalaureate

Amount of Credit: 3 Semester Hours

Minimum Score: 400

Source: www.acenet.edu

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 and methods of science
 - b. Applications of scientific thinking
 - c. History of early astronomy

- II. Astrophysics - 15%**
 - a. Kepler's laws and orbits
 - b. Newtonian physics and gravity
 - c. Relativity

- III. Celestial Systems – 10%**
 - a. Celestial motions
 - b. Earth and the Moon
 - c. Seasons, calendar and time keeping

- IV. The Science of Light – 15%**
 - a. The electromagnetic spectrum
 - b. Telescopes and the measurement of light
 - c. Spectroscopy
 - d. Blackbody radiation

- V. Planetary Systems: Our Solar System and Others– 20%**
 - a. Contents of our solar system
 - b. Formation and evolution of planetary systems
 - c. Exoplanets

d. Habitability and life in the Universe

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

- a. Our Star, the Sun
- b. Properties and classification of stars
- c. Birth, life and death of stars
- d. Nuclear fusion and the origin of the elements

VII. Galaxies – 10%

- a. Our Galaxy: The Milky Way
- b. Classification and structure of galaxies
- c. Measuring Cosmic Distances

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

- a. Galaxy clusters and large-scale structure
- b. The Big Bang and Hubble's law
- c. The evolution and fate of the Universe
- d. Dark matter and dark energy

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:

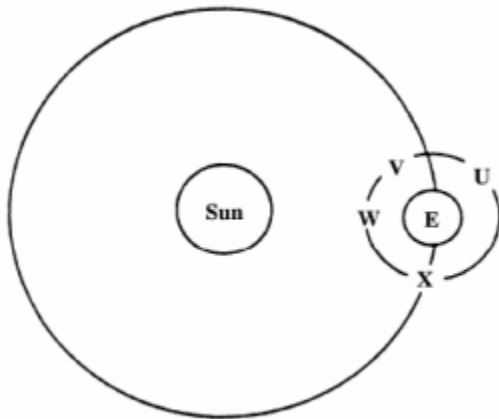
1. Arny, T. and Schneider S. (2017). *Introduction to Astronomy*. McGraw-Hill Higher Education, 8th edition.
 2. Bennett, J. O., Donahue, M.O., Schneider, N. and Voit, M. (2017). *The Cosmic Perspective*. Pearson. 8th edition.
 3. Chaisson, E. and McMillan, S. (2017). *Astronomy: A Beginner's Guide to the Universe*. Pearson, 8th edition.
 4. Fraknoi, A, Morrison, K. and Sidney, C. (2016). *Astronomy*. 12th Media Services.
 5. Freedman, R., Geller, R., Kaufmann, W.J. (2015). *Universe*. 10th edition.
 6. Kay, L., Blumenthal, G. and Palen, S. (2016). *21st Century Astronomy*. W.W. Norton & Company. 5th edition.
 7. Seeds, M. and Backman, D. (2016). *Foundations of Astronomy*. Cengage Learning, 13th edition.
-

SAMPLE QUESTIONS

All test questions are in a multiple-choice format, with one correct answer and three incorrect options. The following are samples of the types of questions that may appear on the exam.

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
- contracting to reach the Main Sequence
 - as a giant off the Main Sequence
 - expanding to reach the Main Sequence
 - 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?
- 5 billion
 - 15 billion
 - 50 billion
 - 100 billion
11. Where is the Moon when there are spring tides on Earth?



E = Earth
U, V, W, X = Positions of the Moon

- U
- V
- W
- X

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