

ASTRONOMY

TEST INFORMATION

This test was developed to enable schools to award credit to students for knowledge equivalent to that which is learned by students taking the course. The school may choose to award college credit to the student based on the achievement of a passing score. The passing score for each examination is determined by the school based on recommendations from the American Council on Education (ACE). This minimum credit-awarding score is equal to the mean score of students in the norming sample who received a grade of C in the course. Some schools set their own standards for awarding credit and may require a higher score than the ACE recommendation. Students should obtain this information from the institution where they expect to receive credit.

CONTENT

The following topics, which are commonly taught in courses on this subject, are covered by this examination.

	Approximate Percent
I. History of Astronomy	9%
A. Nature of science	
B. How scientists think and work	
II. Celestial Mechanics, Including Gravitation and Relativity	5%
III. Celestial Systems	13%
A. Earth and the sky	
B. Earth and the Moon	
C. Time and the calendar	

	Approximate Percent
IV. Astronomical Instruments	12%
A. Measurement and analysis of starlight	
B. The electromagnetic spectrum	
V. The Solar System	19%
A. Contents, form, and motions	
B. Evolution	
VI. The Sun and Stars: Nature and Evolution	17%
VII. Our Galaxy: Contents and Structure	7%
VIII. The Universe: Contents, Structure, and Evolution	10%
IX. Determining Astronomical Distances	5%
X. Life in the Universe	3%

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

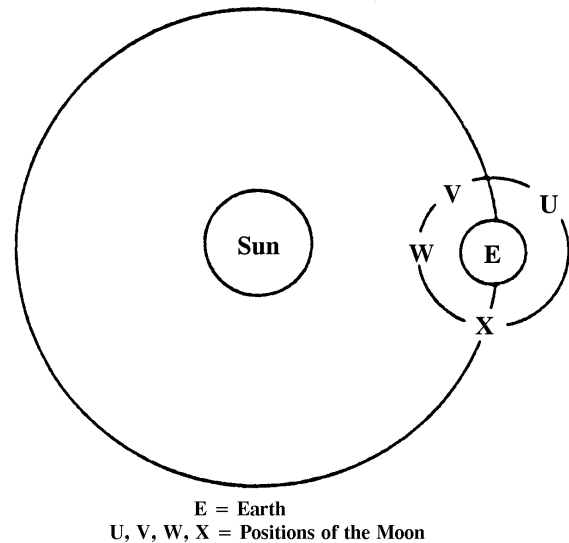
- Knowledge of basic facts and terms (about 45 - 50% of the examination)
- Understanding of concepts and principles (about 40 - 45% of the examination)
- Ability to apply knowledge to specific cases or issues (about 5 - 10% of the examination)



SAMPLE QUESTIONS

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

- Where is the Moon when there are spring tides on Earth?



- U
 - V
 - W
 - X
- The bending of rays of light as they pass from one transparent medium into another is called
 - reflection
 - diffraction
 - dispersion
 - refraction
 - Which of the following planets has been observed to have extensive Van Allen belts similar to those of Earth?
 - Mercury
 - Mars
 - Jupiter
 - Venus
 - 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. 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
11. 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

Kaufmann, William J. *Discovering the Universe*. New York: Freeman, current edition.

Pasachoff, Jay M. *Astronomy: From Earth to the Universe*. Philadelphia: Saunders College Publishing, current edition.

Seeds, Michael. *Horizons: Exploring the Universe*. Belmont, CA: Wadsworth, current edition.

Zeilik, Michael. *Astronomy: The Evolving Universe*. New York: John Wiley and Sons, Inc., current edition.

Current textbook used by a local college or university for a course on the subject.

STUDYING FOR THE EXAMINATION

The following is a list of reference publications that were being used as textbooks in college courses of the same or similar title at the time the test was developed. Appropriate textbooks for study are not limited to those listed below. If you wish to obtain study resources to prepare for the examination, you may reference either the current edition of the following 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** included on the front page of this Fact Sheet/Study Guide **before** selecting textbooks that cover the test content from which to study. Textbooks may be found at the campus bookstore of a local college or university offering a course on the subject.

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

Abell, George *Exploration of the Universe*. New York: CBS/Saunders College Publishing, current edition.

Jastrow, Robert, and Malcolm H. Thompson. *Astronomy: Fundamentals and Frontiers*. New York: John Wiley and Sons, Inc., current edition.

CREDIT RECOMMENDATIONS

The Center for Adult Learning and Educational Credentials of the American Council on Education (ACE) has reviewed and evaluated the DANTES test development process and has made the following recommendations:

Area or Course	Astronomy
Equivalent:	Lower-Level Baccalaureate
Level:	Three (3) semester hours
Amount of Credit:	ACE Commission on
Source:	Educational Credit and
	Credentials

INFORMATION

Colleges and universities that would like to have review copies of tests, additional information about the national norming, or assistance in local norming or score validation studies should write to: DANTES Program, Mail Stop 11-P, The Chauncey Group International, 664 Rosedale Road, Princeton, New Jersey 08540.

It is advisable that schools develop a consistent policy about awarding credit based on scores from this test and that the policy be reviewed periodically. The Chauncey Group will be happy to help schools in this effort.

