



TEXES | Texas Examinations of Educator Standards

Preparation Manual



173 Health Science Technology Education 8–12

Copyright © 2006 by the Texas Education Agency (TEA). All rights reserved. The Texas Education Agency logo and TEA are registered trademarks of the Texas Education Agency. Texas Examinations of Educator Standards, TExES, and the TExES logo are trademarks of the Texas Education Agency.

This publication has been produced for the Texas Education Agency (TEA) by ETS. ETS is under contract to the Texas Education Agency to administer the Texas Examinations of Educator Standards (TExES) program and the Certification of Educators in Texas (ExCET) program. The TExES program and the Examination for the Certification of Educators in Texas (ExCET) program are administered under the authority of the Texas Education Agency; regulations and standards governing the program are subject to change at the discretion of the Texas Education Agency. The Texas Education Agency and ETS do not discriminate on the basis of race, color, national origin, sex, religion, age, or disability in the administration of the testing program or the provision of related services.

PREFACE

The State Board for Educator Certification (SBEC) has developed new standards for Texas educators that delineate what the beginning educator should know and be able to do. These standards, which are based on the state-required curriculum for students—the Texas Essential Knowledge and Skills (TEKS)—form the basis for new Texas Examinations of Educator Standards (TExES™). This initiative will impact all areas of Texas education—from the more than 100 approved Texas educator preparation programs to the more than 7,000 Texas school campuses. This standards-based system reflects the SBEC's commitment to help align Texas education from kindergarten through college. The SBEC's role in this K–16 initiative will ensure that newly certified Texas teachers have the essential knowledge and skills to teach the TEKS to the state's public school students.

This manual is designed to help examinees prepare for the new TExES test in this field. Its purpose is to familiarize examinees with the competencies to be tested, test item formats, and pertinent study resources. Educator preparation program staff may also find this information useful as they help examinees prepare for careers as Texas educators.

If you have any questions after reading this preparation manual or you would like additional information about the new TExES tests or the educator standards, please visit the SBEC Web site at www.sbec.state.tx.us.

KEY FEATURES OF THE MANUAL

List of competencies that will be tested

Strategies for answering test questions

Sample test items and answer key

TABLE OF CONTENTS

SECTION I	THE NEW TExES TESTS FOR TEXAS TEACHERS	1
	Development of the New TExES Tests Taking the TExES Test and Receiving Scores Educator Standards	
SECTION II	USING THE TEST FRAMEWORK	5
	Organization of the TExES Test Framework Studying for the TExES Test Test Framework (Including Proportions of Each Domain)	
SECTION III	APPROACHES TO ANSWERING MULTIPLE-CHOICE ITEMS	19
	Item Formats —Single Items —Items With Stimulus Material	
SECTION IV	SAMPLE ITEMS	27
	Sample Items Answer Key	
SECTION V	PREPARATION RESOURCES	35
	Other Sources Online Resources	

SECTION I

THE NEW TExES TESTS FOR TEXAS TEACHERS

As required by the Texas Education Code §21.048, successful performance on educator certification examinations is required for the issuance of a Texas educator certificate. Each TExES test is a criterion-referenced examination designed to measure the knowledge and skills delineated in the corresponding TExES test framework. Each test framework is based on standards that were developed by Texas educators and other education stakeholders.

Each newly developed TExES test is designed to measure the requisite knowledge and skills that an entry-level educator in this field in Texas public schools must possess. The tests may include both individual, or stand-alone, test items (questions) and items that are arranged in clustered sets based on real-world situations faced by educators.

Development of the New TExES Tests

Committees of Texas educators and interested citizens guide the development of the new TExES tests by participating in each stage of the test development process. These working committees are comprised of Texas educators from public and charter schools, faculty from educator preparation programs, education service center staff, representatives from professional educator organizations, content experts, and members of the business community. The committees are balanced in terms of position, affiliation, years of experience, ethnicity, gender, and geographical location. The committee membership is rotated during the development process so that numerous Texas stakeholders may be actively involved. The steps in the process to develop the TExES tests are described below.

1. **Develop Standards.** Committees are convened to recommend what the beginning educator should know and be able to do. To ensure vertical alignment of standards across the range of instructional levels, individuals with expertise in early childhood, elementary, middle, or high school education meet jointly to articulate the critical knowledge and skills for a particular content area. Participants begin their dialogue using a "clean slate" approach with the Texas Essential Knowledge and Skills (TEKS) as the focal point. Draft standards are written to incorporate the TEKS and to expand upon that content to ensure that all beginning educators possess the appropriate level of both knowledge and skills to instruct students successfully.
2. **Review Standards.** Committees review and revise the draft standards. The revised draft standards are then placed on the SBEC Web site for public review and comment. These comments are used to prepare a final draft of the standards that will be presented to the SBEC Board for discussion, the State Board of Education (SBOE) for review and comment, and the SBEC Board for approval. Standards not based specifically on the TEKS, such as those for librarians and counselors, are proposed as rule by the SBEC Board; sent to the SBOE for its 90-day review; and, if not rejected by the SBOE, adopted by the SBEC Board.
3. **Develop Test Frameworks.** Committees review draft test frameworks that are based on the standards. These frameworks outline the specific competencies to be measured on the new TExES tests. The TExES competencies represent the critical components of the standards that can be measured with either a pencil-and-paper-based or computer-based examination, as appropriate. Draft frameworks are not finalized until after the standards are approved and the job analysis/content validation survey (see #4) is complete.

4. **Conduct Job Analysis/Content Validation Surveys.** A representative sample of Texas educators who practice in or prepare individuals for each of the fields for which an educator certificate has been proposed are surveyed to determine the relative job importance of each competency outlined in the test framework for that content area. Frameworks are revised as needed following an analysis of the survey responses.
5. **Develop and Review New Test Items.** The test contractor develops draft items that are designed to measure the competencies described in the test framework. Committees review the newly developed test items that have been written to reflect the competencies in the new test frameworks. Committee members scrutinize the draft items for appropriateness of content and difficulty; clarity; match to the competencies; and potential ethnic, gender, and regional bias.
6. **Conduct Pilot Test of New Test Items.** All of the newly developed test items that have been deemed acceptable by the item review committees are then administered to an appropriate sample of candidates for certification.
7. **Review Pilot Test Data.** Pilot test results are reviewed to ensure that the test items are valid, reliable, and free from bias.
8. **Administer New TExES Tests.** New TExES tests are constructed to reflect the competencies, and the tests are administered to candidates for certification.
9. **Set Passing Standard.** A Standard Setting Committee convenes to review performance data from the initial administration of each new TExES test and to recommend a final passing standard for that test. The SBEC considers this recommendation as it establishes a passing score on the test.

Taking the TExES Test and Receiving Scores

Please refer to the current TExES registration bulletin for information on test dates, sites, fees, registration procedures, and policies.

You will be mailed a score report approximately four weeks after each test you take. The report will indicate whether you have passed the test and will include:

- a total test *scaled* score. Scaled scores are reported to allow for the comparison of scores on the same content-area test taken on different test administration dates. The total scaled score is not the percentage of items answered correctly and is not determined by averaging the number of questions answered correctly in each domain.
 - For all TExES tests, the score scale is 100–300 with a scaled score of 240 as the minimum passing score. This score represents the minimum level of competency required to be an entry-level educator in this field in Texas public schools.
- your performance in the major content domains of the test and in the specific content competencies of the test.
 - This information may be useful in identifying strengths and weaknesses in your content preparation and can be used for further study or for preparing to retake the test.
- information to help you understand the score scale and interpret your results.

You will not receive a score report if you are absent or choose to cancel your score.

Additionally, unofficial score report information will be posted on the Internet on the score report mailing date of each test administration. Information about receiving unofficial scores via the Internet, the score scale, and other score report topics may be found on the SBEC Web site at www.sbec.state.tx.us.

Educator Standards

Complete, approved educator standards are posted on the SBEC Web site at www.sbec.state.tx.us.

SECTION II

USING THE TEST FRAMEWORK

The Texas Examination of Educator Standards (TExES) test measures the content knowledge required of an entry-level educator in this field in Texas public schools. This manual is designed to guide your preparation by helping you become familiar with the material to be covered on the test.

When preparing for this test, you should focus on the competencies and descriptive statements, which delineate the content that is eligible for testing. A portion of the content is represented in the sample items that are included in this manual. These test questions represent only a *sample* of items. Thus, your test preparation should focus on the complete content eligible for testing, as specified in the competencies and descriptive statements.

Organization of the TExES Test Framework

The test framework is based on the educator standards for this field.

The content covered by this test is organized into broad areas of content called domains. Each domain covers one or more of the educator standards for this field. Within each domain, the content is further defined by a set of competencies. Each competency is composed of two major parts:

1. the *competency statement*, which broadly defines what an entry-level educator in this field in Texas public schools should know and be able to do, and
2. the *descriptive statements*, which describe in greater detail the knowledge and skills eligible for testing.

The educator standards being assessed within each domain are listed for reference at the beginning of the test framework, which begins on page 8. These are then followed by a complete set of the framework's competencies and descriptive statements.

An example of a competency and its accompanying descriptive statements is provided on the next page.

Sample Competency and Descriptive Statements

Health Science Technology Education 8–12

Competency:

The teacher understands major trends in the history of health care and the impact of health care on society.

Descriptive Statements:

The beginning teacher:

- Knows major historical events in the development of health care and understands their impact on society.
- Describes the economic impact of health services on society, the systems that finance health care in a free-enterprise economy, and the features of different health care reform plans in the United States.
- Identifies age and cultural influences that impact health care delivery.
- Compares and contrasts strategies used by different cultures to solve health-related problems.
- Describes the roles of individuals and organizations (e.g., Centers for Disease Control and Prevention, Department of Health and Human Services, World Health Organization) in the prevention and containment of disease in a global society.
- Identifies the impact of technological advances on health care and analyzes issues related to the appropriate use of technological resources in health care.

Studying for the TExES Test

The following steps may be helpful in preparing for the TExES test.

1. Identify the information the test will cover by reading through the test competencies (see the following pages in this section). *Within each domain* of this TExES test, each competency will receive approximately equal coverage.
2. Read each competency with its descriptive statements in order to get a more specific idea of the knowledge you will be required to demonstrate on the test. You may wish to use this review of the competencies to set priorities for your study time.
3. Review the "Preparation Resources" section of this manual for possible resources to consult. Also, compile key materials from your preparation coursework that are aligned with the competencies.
4. Study this manual for approaches to taking the TExES test.
5. When using resources, concentrate on the key ideas and important concepts that are discussed in the competencies and descriptive statements.

NOTE: This preparation manual is the only TExES test study material endorsed by the SBEC for this field. Other preparation materials may not accurately reflect the content of the test or the policies and procedures of the TExES program.

TEST FRAMEWORK FOR FIELD 173: HEALTH SCIENCE TECHNOLOGY EDUCATION 8–12

Domain I Academic Foundations
(approximately 19% of the test)

Standards Assessed:

Health Science Technology Education 8–12 Standard I:

Academics: The health science technology education teacher is proficient in the academic subjects needed to teach the statewide curriculum (Texas Essential Knowledge and Skills [TEKS]) for Health Science Technology Education.

Domain II Medical Sciences
(approximately 19% of the test)

Standards Assessed:

Health Science Technology Education 8–12 Standard I:

Academics: The health science technology education teacher is proficient in the academic subjects needed to teach the statewide curriculum (Texas Essential Knowledge and Skills [TEKS]) for Health Science Technology Education.

Domain III Occupational Knowledge
(approximately 44% of the test)

Standards Assessed:

Health Science Technology Education 8–12 Standard I:

Academics: The health science technology education teacher is proficient in the academic subjects needed to teach the statewide curriculum (Texas Essential Knowledge and Skills [TEKS]) for Health Science Technology Education.

Health Science Technology Education 8–12 Standard III:

Health and Wellness: The health science technology education teacher applies the concept of wellness and the fundamentals of disease prevention to promote healthy behaviors.

Health Science Technology Education 8–12 Standard IV:

Health Care Systems: The health science technology education teacher understands the roles of health care workers and the function of the diagnostic, therapeutic, informational, and environmental systems of health care.

Health Science Technology Education 8–12 Standard VI:

Safety: The health science technology education teacher understands industry safety policies, safety procedures, and preventive measures to minimize injury and illness.

**Domain IV Professional Responsibilities
(approximately 19% of the test)**

Standards Assessed:

Health Science Technology Education 8–12 Standard II:

Communication: The health science technology education teacher demonstrates proficiency in verbal and nonverbal communication skills.

Health Science Technology Education 8–12 Standard V:

Employability: The health science technology education teacher uses his or her professional work experience in the health care delivery system to help prepare students for successful careers in the health care industry.

Health Science Technology Education 8–12 Standard VII:

Ethical and Legal Issues: The health science technology education teacher understands the ethical and legal responsibilities of health care workers.

Health Science Technology Education 8–12 Standard VIII:

Teaming: The health science technology education teacher understands the importance of teaming and leadership skills in providing both quality client health care and effective student instruction.

Health Science Technology Education 8–12 Standard IX:

Partnerships: The health science technology education teacher understands the importance of developing partnerships with parents/guardians, industry, education institutions, and the community to enhance student learning and strengthen the health science technology education program.

Health Science Technology Education 8–12 Standard X:

Professional Development: The health science technology education teacher understands the importance of lifelong learning and continuing professional development.

DOMAIN I—ACADEMIC FOUNDATIONS

Competency 001

The teacher understands major trends in the history of health care and the impact of health care on society.

The beginning teacher:

- Knows major historical events in the development of health care and understands their impact on society.
- Describes the economic impact of health services on society, the systems that finance health care in a free-enterprise economy, and the features of different health care reform plans in the United States.
- Identifies age and cultural influences that impact health care delivery.
- Compares and contrasts strategies used by different cultures to solve health-related problems.
- Describes the roles of individuals and organizations (e.g., Centers for Disease Control and Prevention, Department of Health and Human Services, World Health Organization) in the prevention and containment of disease in a global society.
- Identifies the impact of technological advances on health care and analyzes issues related to the appropriate use of technological resources in health care.

Competency 002

The teacher applies academic skills to health science, understands scientific methods and the impact of scientific research on the health sciences, and organizes and communicates valid conclusions from experimental data.

The beginning teacher:

- Solves mathematical problems relating to the health sciences.
- Uses the process of scientific inquiry and applies critical-thinking skills to solve problems.
- Applies basic principles of physics, chemistry, and the biomedical sciences to analyze situations and solve problems.
- Interprets and analyzes scientific and technical data related to health care.
- Analyzes, reviews, and critiques hypotheses, theories, and studies using scientific evidence and information and draws valid conclusions.
- Makes responsible choices in selecting everyday products and services using scientific information.
- Plans and implements appropriate investigative procedures (e.g., asking questions, formulating testable hypotheses, selecting equipment and technology).
- Collects, organizes, and displays experimental results using charts, tables, and graphs.
- Analyzes data and makes inferences and predicts trends.
- Knows where to obtain and how to use available resources common to the health care profession.

Competency 003

The teacher understands medical terminology related to health care and uses it appropriately.

The beginning teacher:

- Identifies medical abbreviations, acronyms, and symbols.
- Identifies the meaning of medical word prefixes, suffixes, and roots.
- Accurately interprets and transcribes medical vocabulary.
- Reports observations using medical terminology.
- Translates medical terms to conversational language.
- Uses medical and dental dictionaries, multimedia resources, and Internet sites.
- Uses appropriate resources (e.g., texts, journals, reference manuals).

DOMAIN II—MEDICAL SCIENCES**Competency 004**

The teacher understands the anatomical structures of the human body and their relationship to the physiological functions and processes that maintain homeostasis.

The beginning teacher:

- Relates physiological functions to anatomical structures within the body systems.
- Analyzes biological and chemical processes that maintain homeostasis.
- Analyzes the chemical reactions that provide energy for the body.
- Identifies the means, including the structure and function of the digestive system, by which nutrients are processed and energy is utilized or stored.
- Analyzes the effects of energy deficiencies in malabsorption disorders (e.g., diabetes, hypothyroidism, Crohn's disease).
- Analyzes and describes the effects of pressure, movement, torque, tension, and elasticity on the human body.
- Explains how coordination of muscles, bones, and joints allows movement of the body.
- Identifies and relates the changes in structures and functions due to trauma, disease, and environmental conditions.
- Describes the anatomy and physiology of the nervous system, including conduction systems (e.g., nerve transmission, muscle stimulation).
- Analyzes the physical, chemical, and biological properties of the circulatory, respiratory, and excretory transport systems.
- Describes the development of cells, tissues, organs, and systems.
- Describes the human development cycle.

Competency 005

The teacher understands the relationship between microorganisms and health and the role of microorganisms in infectious diseases.

The beginning teacher:

- Describes the historical development of microbiology as it relates to health care.
- Identifies the chemical processes, morphology, and characteristics of microorganisms.
- Describes techniques (e.g., use of a microscope, preparation of bacterial cultures) used to identify microorganisms.
- Determines the factors required for microbial reproduction and growth.
- Identifies normal flora of the human body.
- Describes the infectious disease process (e.g., reservoir, mode of transmission, incubation period).
- Identifies pathogens of the human body.
- Explains the effects of antimicrobial agents.

Competency 006

The teacher understands the mechanisms of pathology, the process of pathogenesis, a variety of human diseases, and the effects of disease prevention and control.

The beginning teacher:

- Identifies biological and chemical processes at the cellular level.
- Associates disease processes with changes in homeostasis.
- Identifies factors contributing to disease (e.g., age, gender, environment, lifestyle, heredity).
- Describes stages in the progression of disease.
- Identifies pathogenic organisms, mutations, neoplasms, and their associated disease processes.
- Recognizes the stages of pathogenesis (e.g., incubation, prodromal and symptomatic periods, exacerbation, remission).
- Analyzes the body's natural defenses against infection, including inflammatory and immune system responses.
- Explains the effects of chemical agents, environmental pollution, and trauma on the disease process.
- Identifies and describes congenital disorders and childhood diseases.
- Analyzes public health issues related to asepsis, isolation, immunization, and quarantine.
- Compares treatment options for diseases.
- Describes diseases that threaten world health.

DOMAIN III—OCCUPATIONAL KNOWLEDGE

Competency 007

The teacher understands the aging process, including the sociological implications and psychological effects of aging.

The beginning teacher:

- Identifies the physiological and cognitive patterns of change in aging individuals.
- Analyzes nutritional and pharmacological issues associated with aging.
- Describes the presentation of disease in older adults (e.g., heart attacks).
- Describes the myths regarding aging.
- Identifies cultural responses to aging.
- Describes and analyzes ethical issues regarding older adults.
- Analyzes the impact of a "graying" population on twenty-first-century health care.
- Describes and evaluates social services available to older adults.
- Identifies the psychological aspects of aging, including responses to death and dying.

Competency 008

The teacher understands foundations and therapeutic concepts of nutrition and social and cultural issues related to nutrition.

The beginning teacher:

- Analyzes nutritional information, including that presented on food labels.
- Describes the nutritional needs of different populations (e.g., clients undergoing chemotherapy and radiation, clients of different ages).
- Describes how culture influences nutritional preferences.
- Assesses clients' nutritional needs.
- Describes eating disorders (e.g., anorexia, bulimia) and how they affect individuals.
- Identifies therapeutic diets.
- Describes food additives and food allergies.
- Describes the roles of vitamins and vitamin supplements.
- Describes the relationship between nutrition and world health.
- Describes the impact of government services and regulatory agencies on nutrition.
- Identifies alternative methods of nutrition (e.g., macrobiotic diets, antioxidants).

Competency 009**The teacher understands the concepts of and the technology used in pharmacology.**

The beginning teacher:

- Uses drug references (e.g., the Physicians' Desk Reference [PDR], inserts in drug packaging).
- Describes instructions related to drug administration (e.g., taking medicine on an empty stomach, spacing of daily doses).
- Identifies drug names, classifications, actions, and interactions.
- Identifies indications and contraindications of drugs.
- Identifies side effects and toxic effects of drugs as well as adverse reactions to drugs.
- Identifies routes of drug administrations.
- Describes the differences between generic and brand-name drugs.
- Compares and contrasts Food and Drug Administration (FDA)-approved drugs to alternative medicines.
- Uses technology to access, process, and retrieve information.

Competency 010**The teacher understands the concepts of, and social and cultural issues related to, mental health.**

The beginning teacher:

- Describes the psychological aspects of health and wellness across the life span.
- Describes pathophysiology of the nervous system.
- Identifies the physiological aspects of stress.
- Identifies symptoms of maladaptive conditions (e.g., paranoia, schizophrenia, aggression, depression).
- Describes treatment options (e.g., psychotherapy, medication, behavior modification) for a variety of mental health needs.
- Identifies societal perspectives and socioeconomic factors as they affect mental health.
- Describes the role of social services (e.g., drug dependency rehabilitation centers).

Competency 011

The teacher understands the fundamentals of wellness and disease prevention and the importance of preventive health behaviors.

The beginning teacher:

- Relates concepts of health and wellness to each phase of the life span and relates these to disease prevention and risk management.
- Identifies human needs according to Maslow's Hierarchy of Human Needs.
- Identifies warning signs and explains the importance of early detection.
- Explains the relationship between nutrition, disease, and the quality of life.
- Evaluates wellness strategies for the prevention and control of disease.
- Analyzes health-related social issues (e.g., access to health care, organ donation, religious beliefs).
- Analyzes risk factors and consequences of unhealthy behaviors.
- Promotes healthy behaviors and wellness strategies, products, information, and services.
- Evaluates information and products related to traditional and alternative health care.

Competency 012

The teacher understands the skills and roles of health care workers and the function of the diagnostic, therapeutic, informational, and environmental systems of health care.

The beginning teacher:

- Describes the uses of appropriate technology (e.g., ultrasound, magnetic resonance imaging, X-rays, other diagnostic tests) and equipment (e.g., electrocardiograph) used in the delivery of health care.
- Assesses and monitors client status and accurately measures, records, and interprets vital signs throughout the life span.
- Describes how to safely move, lift, and transport patients.
- Assesses client nutrition and hygiene.
- Demonstrates skills associated with activities of daily living and rehabilitative care.
- Uses appropriate protocols, procedures, and technology for the collection and dissemination of client health care data.
- Identifies client privacy issues and is familiar with the Patient Privacy Rule and the Health Insurance Portability and Accountability Act (HIPAA).

Competency 013

The teacher understands the importance of maintaining a safe environment and knows the roles of regulatory agencies, including safety policies, procedures, and standard precautions, as they relate to health care workers and controlling the spread of infection.

The beginning teacher:

- Evaluates environments for personal and client safety.
- Identifies fire prevention procedures according to facility protocol.
- Describes appropriate responses to emergencies (e.g., triage, first aid, cardiopulmonary resuscitation).
- Identifies and explains the principles of body mechanics that minimize personal and client injury.
- Describes protocols related to chemicals and hazardous materials.
- Identifies the possible roles of chemical, biological, and radiological agents in man-made and natural environmental disasters.
- Knows procedures related to preparedness for disasters (e.g., hurricanes, floods, ice storms, terrorist attacks).
- Describes the cycle of the infectious process.
- Describes and explains the use of standard precautions to prevent nosocomial infections.
- Identifies, describes, and demonstrates universal protection guidelines (e.g., levels of protection, appropriate equipment) for the personal protection of health care workers.
- Compares the functions of regulatory agencies (e.g., Occupational Safety and Health Administration, Food and Drug Administration, Centers for Disease Control and Prevention).
- Describes school, laboratory, and workplace safety policies and procedures and follows safe and responsible practices in laboratory investigations and fieldwork.

DOMAIN IV—PROFESSIONAL RESPONSIBILITIES

Competency 014

The teacher communicates appropriately in medical environments and understands the importance of teaming and leadership skills and of developing partnerships within the health care community.

The beginning teacher:

- Adapts communication to the needs (e.g., physical, psychological, cultural) of individuals in a diverse society.
- Describes the importance of accurate communication with clients and members of the health care team.
- Analyzes client data, records, and technical reports.
- Describes appropriate communication skills in a variety of settings (e.g., over the phone, in reception areas, during interactions with clients, during work with other medical staff).
- Describes how the health care team uses teaming skills to provide quality health care.
- Describes skills, characteristics, and responsibilities of leaders and group members.
- Uses problem-solving skills to negotiate and resolve conflicts.
- Uses community resources for student benefit (e.g., involving parents/guardians in student learning and career development, using health care professionals in the formal instruction of students).
- Uses partnerships to prepare students for the transition from secondary to postsecondary education and to provide quality work-based learning opportunities (i.e., paid and unpaid).

Competency 015

The teacher prepares students for successful careers in the health care industry and understands the importance of lifelong learning and continuing professional development.

The beginning teacher:

- Identifies professional characteristics of health care workers.
- Locates, evaluates, and interprets career options, employment information, and career enhancement opportunities and describes the procedures necessary to seek, secure, and maintain employment.
- Identifies and promotes productive work habits such as punctuality, attendance, and time management.
- Guides students to set realistic career and educational goals based on personal interests, aptitudes, and lifestyles.
- Identifies new and emerging careers in health care.
- Uses the statewide curriculum (Texas Essential Knowledge and Skills [TEKS]) for Health Science Technology Education.
- Integrates new and emerging technology into the curriculum and selects a variety of appropriate resources (e.g., professional publications and journals) when preparing lessons.
- Describes the advantages of participating in professional development opportunities that address topics related to health care.

Competency 016

The teacher understands the ethical and legal responsibilities of health care workers.

The beginning teacher:

- Describes ethical behavior.
- Recognizes the necessity of client confidentiality.
- Explains the protocols and legal requirements of the health care industry within a designated scope of practice.
- Describes the purpose and use of policy and procedure manuals.
- Identifies clients' rights and health care options.
- Identifies and analyzes issues related to malpractice, negligence, and liability.
- Describes the effects of unethical practices on consumers.
- Identifies circumstances that affect clients' rights (e.g., living will, durable power of attorney).
- Analyzes issues related to death and dying.

SECTION III

APPROACHES TO ANSWERING MULTIPLE-CHOICE ITEMS

The purpose of this section is to describe multiple-choice item formats that you may see on the TExES test in this field and to suggest possible ways to approach thinking about and answering the multiple-choice items. However, these approaches are not intended to replace familiar test-taking strategies with which you are already comfortable and that work for you.

The Health Science Technology Education 8–12 test is designed to include 80 scorable multiple-choice items and approximately 10 nonscorable items. Your final scaled score will be based only on scorable items. The nonscorable multiple-choice items are pilot tested by including them in the test in order to collect information about how these questions will perform under actual testing conditions. Nonscorable test items are not considered in calculating your score, and they are not identified on the test.

All multiple-choice questions on this test are designed to assess your knowledge of the content described in the test framework. The multiple-choice questions assess your ability to recall factual information **and** to think critically about the information, analyze it, consider it carefully, compare it with other knowledge you have, or make a judgment about it.

When you are ready to answer a multiple-choice question, you must choose one of four *answer choices* labeled A, B, C, and D. Then you must mark your choice on a separate answer sheet.

Item Formats

You may see the following two types of multiple-choice questions on the test.

- Single items
- Items with stimulus material

You may have two or more items related to a single stimulus. This group of items is called a cluster. Following the last item of a clustered item set containing two or more items, you will see the graphic illustrated below.



This graphic is used to separate these clustered items related to specific stimulus material from other items that follow.

On the following pages, you will find descriptions of these commonly used item formats, along with suggested approaches for answering each type of item. In the actual testing situation, you may mark the test items and/or write in the margins of your test booklet, **but your final response must be indicated on the answer sheet provided.**

SINGLE ITEMS

In the single item format, a problem is presented as a direct question or an incomplete statement, and four answer choices appear below the question. The following question is an example of this type. It tests knowledge of Health Science Technology Education 8–12 competency 006: *The teacher understands the mechanisms of pathology, the process of pathogenesis, a variety of human diseases, and the effects of disease prevention and control.*

Which of the following statements accurately describes the current status of tuberculosis as a threat to world health?

- A. Tuberculosis can be effectively treated and remains a significant threat only in countries with arid climates.
 - B. Tuberculosis remains a significant threat to world health because it continues to evolve and resist the drugs created to combat it.
 - C. Tuberculosis currently represents a significant threat only to individuals who are undernourished or have compromised immune systems.
 - D. Tuberculosis has been effectively eradicated in most countries and no longer constitutes a significant threat to world health.
-

Suggested Approach

Read the question carefully and critically. Think about what it is asking and the situation it is describing. Eliminate any obviously wrong answers, select the correct answer choice, and mark it on your answer sheet.

Tuberculosis is a disease that has historically been a significant health problem for urbanized human societies. This question asks for up-to-date knowledge of tuberculosis in the modern world. Look at the response options and consider which of them best describes the status of this disease as a threat to world health.

Option A states that tuberculosis can be effectively treated, which is true. However, it is not true that it remains a significant threat only in countries with arid climates. Tuberculosis is worldwide and remains an important health threat in developing countries, particularly in communities with high population density and poor public hygiene. Option A is not accurate.

Option B states that tuberculosis remains a threat to world health and continues to evolve and resist the drugs created to combat it. This is true. Not only is tuberculosis endemic throughout much of the world today, but the bacteria that cause it are becoming resistant to the antibiotics that have been used to treat it successfully in the past. Option B is the best response.

Option C states that tuberculosis represents a significant health threat only to individuals who are undernourished, or have compromised immune systems (such as those infected with the HIV virus). However, tuberculosis is by no means limited to those risk groups. In the modern world it is endemic in many developing countries with high density populations that live in urban environments with inadequate sanitation, hygiene, and public health care. Option C is not an accurate response.

Option D states that tuberculosis has been effectively eradicated in many countries and is no longer a significant threat to world health. Tuberculosis remains a worldwide threat to human health, and in fact is an increasing problem, particularly in developing countries. Option D is not correct.

Of the alternatives offered, only option B is accurate. Therefore, the correct response is option B.

The following question tests knowledge of Health Science Technology Education 8–12 competency 007: *The teacher understands the aging process, including the sociological implications and psychological effects of aging.*

An elderly woman has recently entered a nursing home and wishes to choose her own clothing and dress herself each day. She is able to do this, but the process usually takes considerably longer than if an attendant assists her. The attendant should:

- A. ask another patient with better small motor skills to assist her since this will speed up the process without taking up the attendant's time.
 - B. explain to the patient that it is not necessary for her to get dressed except on days when she is expecting visitors.
 - C. allow the patient to dress herself because this will enable her to maintain a sense of self-worth and independence.
 - D. continue to assist the patient because allowing her the time to dress herself is not fair to other patients who may require the attendant's assistance.
-

Suggested Approach

Read the question carefully and critically. Think about what it is asking and the situation it is describing. Eliminate any obviously wrong answers, select the correct answer choice, and mark it on your answer sheet.

Older individuals are a significant and increasing portion of the general population, and it is important for health care workers to understand the aging process as well as the social and psychological factors that influence the physical and mental health in older persons. The question asks what is the best approach for a health care worker to take in assisting an elderly woman newly arrived in a nursing home. Look at the response options and consider which of them describes the best way for the worker to respond to the woman's needs.

Option A suggests that the best response to the situation is for the attendant to ask another patient to assist the woman. This would certainly speed up the dressing process and might provide gratification to the patient providing the assistance. However, it would be insensitive to the woman's efforts to maintain a sense of independence and self-sufficiency at a time when she is likely to be especially aware of her diminished capacities. Option A does not represent the best response by the health care attendant.

Option B suggests that it is not necessary for the woman to make the effort to get dressed unless she is expecting visitors. This would certainly be more convenient for the attendant but would lead to a more rapid deterioration of the woman's motor skills as well as undermine her attempts to maintain a sense of self-sufficiency and personal worth. Option B does not represent the best response by the health care attendant.

Option C suggests that the attendant should allow the woman to dress herself since this will enable her to maintain a sense of self-worth and independence. The maintenance of a patient's sense of self-sufficiency and personal worth should be an important goal for an effective health care provider. Option C is the best response.

Option D suggests that the attendant continue to assist the patient so the process will take less time and free the attendant to assist other patients. Although there might be some occasions when assisting other patients should be a priority for the attendant, to routinely deny the woman her wish to dress herself will undermine her self-esteem if her desires and needs are consistently considered to be less important than those of other patients. Option D does not represent the best response by the attendant.

Options A, B, and D describe plausible approaches a health care attendant might take in dealing with the situation in the nursing home. However, all are insensitive to the importance of maintaining the feeling of independence and self-worth that supports both the physical and mental health in an aging individual. Therefore, the correct response is option C.

The following question tests knowledge of Health Science Technology Education 8–12 competency 008: *The teacher understands foundations and therapeutic concepts of nutrition and social and cultural issues related to nutrition.*

Anorexia nervosa and bulimia can best be described as:

- A. psychological disorders that are associated with self-destructive eating behaviors.
 - B. digestive diseases that are caused by inadequate nutrition.
 - C. congenital diseases that are characterized by pathological eating patterns.
 - D. metabolic disorders that trigger destructive eating habits.
-

Suggested Approach

Read the question carefully and critically. Think about what it is asking and the situation it is describing. Eliminate any obviously wrong answers, select the correct answer choice, and mark it on your answer sheet.

Anorexia nervosa and bulimia are abnormal unhealthy behaviors centering around food and diet, most frequently exhibited by female adolescents and young women. The question asks for a description of these behaviors. Look at the response options and consider which of them best describes the nature of these eating disorders.

Option A states that anorexia nervosa and bulimia are psychological disorders that are associated with self-destructive eating behaviors. Anorexia is characterized by an intense fear of gaining weight and a distorted body image, and bulimia combines a fear of gaining weight with bingeing and purging behavior. Both behaviors can severely damage personal health. Option A is an accurate description of these two conditions.

Option B states that anorexia nervosa and bulimia are digestive diseases that are caused by inadequate nutrition. This is inaccurate since anorexia and bulimia are not caused by physical disease nor are they caused by inadequate nutrition, although anorexia is characterized by the latter. Option B is not an accurate response.

Option C states that anorexia nervosa and bulimia are congenital diseases characterized by pathological eating patterns. This is untrue since these conditions are not congenital, i.e., they do not exist from birth. Option C is inaccurate and thus not a good response.

Option D states that anorexia nervosa and bulimia are metabolic disorders that trigger destructive eating habits. This is not true since these disorders do not have a metabolic basis. Thus Option D is not an accurate response.

Options B, C, and D are each partially or completely inaccurate descriptions of anorexia nervosa and bulimia. Only option A is accurate. Therefore, the correct response is option A.

SECTION IV

SAMPLE ITEMS

This section presents some sample test items for you to review as part of your preparation for the test. To demonstrate how each competency may be assessed, each sample item is accompanied by the competency number that it measures. While studying, you may wish to read the competency before and after you consider each sample item. Please note that the competency numbers will not appear on the actual test form.

An answer key follows the sample items. The answer key lists the item number and correct answer for each sample test item. Please note that the answer key also lists the competency assessed by each item and that the sample items are not necessarily presented in competency order.

The sample items are included to illustrate the formats and types of items you may see on the test; however, your performance on the sample items should not be viewed as a predictor of your performance on the actual examination.

Health Science Technology Education 8–12

Competency 001

1. The primary mission of the World Health Organization is to:
 - A. develop and staff health care facilities in impoverished regions around the world.
 - B. compile statistics and information on disease and investigate and address global health problems.
 - C. establish and enforce universal standards to protect workers from job-related injuries and illnesses.
 - D. ensure the safety of food and drug products sold and distributed throughout the world.

Competency 002

2. Use the data below to answer the question that follows.

Day	Quantity of Drug Remaining
Monday	160 mg
Tuesday	80 mg
Wednesday	40 mg

A nurse injects a patient with 160 mg of a drug at noon on Monday. If the quantity of drug remaining in the patient is measured at noon every day and the pattern shown in the table continues, during which day will the quantity of drug remaining in the patient's system initially fall below 5 mg?

- A. Friday
- B. Saturday
- C. Sunday
- D. Monday

Competency 003

3. A patient's medical chart indicates that a medication should be given *prn*. According to these instructions the patient should take the medication:
- A. twice a day.
 - B. with food.
 - C. every four hours.
 - D. as needed.

Competency 004

4. One of the primary roles of the liver is to:
- A. break down fats into fatty acids and glycerides.
 - B. regulate levels of glucose in the blood.
 - C. secrete insulin in response to the level of sugar in the blood.
 - D. filter excess fatty acids and lipids from the blood.

Competency 005

5. Certain members of the bacterial genus *Clostridium* are ubiquitous in the soil and water but only cause disease in humans under highly specific conditions. For example, *C. tetani* can cause tetanus when introduced into the body in a puncture wound, and *C. septicum* can cause gangrene when introduced into dead and dying tissue. The best explanation for the restrictions on the ability of these bacteria to cause disease is that members of this genus:
- A. are easily destroyed by white blood cells that are present in living tissue.
 - B. require other bacteria to break down living cells in order to feed on the cell components.
 - C. can only grow and reproduce in the absence of oxygen.
 - D. require high temperatures associated with localized inflammation to grow and reproduce.

Competency 005

6. Several people at a family picnic ingest food that is contaminated by bacteria. Several hours later they develop intestinal cramps, diarrhea, and severe nausea. The period of time between when they ingested the food and the appearance of symptoms is called the:
- A. latency period.
 - B. incubation period.
 - C. infectious period.
 - D. dormancy period.

Competency 007

7. A visiting nurse is interviewing an elderly patient in the patient's home. The patient complains that she has gained five pounds in the last few days and has been experiencing shortness of breath. The nurse also notices that the patient's ankles are considerably swollen. According to this evidence the nurse should suspect that the patient is suffering from:
- A. congestive heart failure.
 - B. peripheral vascular disease.
 - C. liver failure.
 - D. pneumonia.

Competency 008

8. Alternative nutritional therapies that encourage the use of antioxidants seek to prevent health problems by:
- A. neutralizing free radicals.
 - B. decreasing blood sugar levels.
 - C. stimulating the immune system.
 - D. reducing the level of triglycerides.

Competency 009

9. One potentially serious drawback of using antibiotics is that they:
- A. may cause a buildup of toxins in the gastrointestinal tract, which can interfere with digestion.
 - B. may raise blood pressure to unacceptably high levels when hypertension is present.
 - C. may inhibit the activity of normal flora found in tissues, allowing resistant organisms to multiply.
 - D. may compromise the immune system by damaging beneficial cells such as leukocytes.

Competency 010

10. Clinical depression is a common psychiatric disorder that:
- A. is often successfully treated by placing patients in pleasant surroundings and encouraging them to focus on pleasurable feelings and experiences.
 - B. is characteristic of most people undergoing a period of grief, bereavement, or mourning in response to the loss of beloved persons or objects.
 - C. is a state of disproportionately long or severe mental distress in patients that often responds well to treatments such as counseling, psychotherapy, or medication.
 - D. is a temporary emotional state that is best treated by allowing people the time and space to work through their difficulties without active medical intervention.

Competency 012

11. One important benefit of the computerized tomography (CT) scanner is that it allows physicians to:
- A. direct high-frequency sound waves through the chest wall and into the heart to clearly examine cardiac structures and functions.
 - B. use a computerized noninvasive X-ray procedure to see clear, cross-sectional views of both bone and body tissue.
 - C. view an organ or bone from all angles by tracking the progress of a slightly radioactive substance that has been injected into the body.
 - D. employ magnetic resonance to gain active images of the body's processes, such as the movement of blood through veins and arteries.

Competency 012

12. A community health nurse is visiting a patient who is recovering at home from recent major surgery. The patient complains that he isn't feeling well and has little appetite. Which of the following would be the most appropriate response by the nurse?
- A. Check the patient's vital signs and ask what medications he is taking.
 - B. Ask the patient's spouse to make a point of preparing his favorite foods.
 - C. Reassure the patient and remind him that recovery is a gradual process.
 - D. Suggest that he eat frequent snacks rather than a few large meals.

Competency 013

13. A patient would most likely be kept in isolation in a hospital if he or she had which of the following diseases?
- A. West Nile virus
 - B. HIV
 - C. tuberculosis
 - D. diverticulitis

Competency 014

14. A nurse needs to update a doctor on a patient's status. He sees the doctor in the elevator on the way to the cafeteria. Which of the following would be the most appropriate action by the nurse?
- A. Advise the doctor that the patient's lab results are abnormal.
 - B. Provide the doctor with the update in the elevator.
 - C. Provide the doctor with the update over lunch.
 - D. Advise the doctor that there is updated information and ask her to call after lunch.

Competency 014

15. An elderly patient with kidney disease has told a nurse in a hospital that she wishes to discontinue dialysis treatments that might forestall death. The most appropriate response by the nurse would be to:
- A. urge the patient to undergo the treatment, pointing out that she will feel much better after the dialysis.
 - B. respect the patient's wishes, terminate the dialysis treatments, and arrange for her to go home.
 - C. ask a psychologist to attempt to determine the patient's state of mind.
 - D. avoid responding to the patient because she is probably depressed or confused.

Competency 015

16. Two students are playing the roles of emergency medical technicians who have responded to a patient's medical emergency. They use telemedicine technology to transmit medical data to an emergency room "physician" who directs the care of the "patient" from another building. The health science technology teacher probably included this activity in the curriculum because it demonstrates:
- A. how technology will ultimately replace in-person observation by the attending physician.
 - B. how new and emerging technology can improve patient care in emergency situations.
 - C. that at least two emergency medical technicians are needed to provide adequate care for the patient.
 - D. the importance for the physician of maintaining professional detachment in making life-and-death decisions.

Competency 016

17. Which of the following best describes the guidelines regarding the confidentiality of patients' medical records?
- A. Access to a patient's medical records is limited to the patient's primary care physician.
 - B. Information becomes part of the public record unless the patient specifically requests confidentiality.
 - C. Health care workers are obligated to share relevant information with the patient's immediate family.
 - D. Access to a patient's medical records is restricted to members of the patient's health care team.

ANSWER KEY

Item Number	Correct Answer	Competency
1	B	001
2	B	002
3	D	003
4	B	004
5	C	005
6	B	005
7	A	007
8	A	008
9	C	009
10	C	010
11	B	012
12	A	012
13	C	013
14	D	014
15	C	014
16	B	015
17	D	016

SECTION V

PREPARATION RESOURCES

The resources listed below may help you prepare for the TExES test in this field. These preparation resources have been identified by content experts in the field to provide up-to-date information that relates to the field in general. You may wish to use current issues or editions to obtain information on specific topics for study and review.

Other Sources

Badasch, S. A., Chesebro, D. S., and Weissman, J. S. (2004). *Introduction to Health Occupations: Today's Health Care Worker*. Upper Saddle River, NJ: Pearson/Prentice Hall.

Becker, J. (2002). *Medical Terminology: Language for Health Care*. New York, NY: Glencoe/McGraw-Hill.

Booth, K. A. (2004). *Health Care Science Technology: Career Foundations*. New York, NY: Glencoe/MacMillan McGraw-Hill.

Chabner, D. (2001). *The Language of Medicine*, 6th ed. New York, NY: Elsevier/Mosby & Saunders.

Drench, M., Noonan, A., Sharby, A., and Ventura, S. (2003). *Psychosocial Aspects of Healthcare*. Upper Saddle River, NJ: Prentice Hall.

Ehrlich, A., and Schroeder, C. L. (2004). *Introduction to Medical Terminology*. Clifton Park, NY: Delmar Learning.

Frengen, B. (2002). *Medical Law and Ethics*. Upper Saddle River, NJ: Prentice Hall.

Frengen, B., and Frucht, S. (2002). *Medical Terminology: An Anatomy and Physiology Systems Approach*. Upper Saddle River, NJ: Prentice Hall.

Gerdin, J. (2004). *Health Careers Today*, 3rd ed. New York, NY: Elsevier/Mosby & Saunders.

Insel, P. M., and Roth, W. T. (2000). *Core Concepts in Health*. Mountain View, CA: Mayfield Publishing.

Mackely, S. (2000). *The Health Care Worker's Primer on Professionalism*. Upper Saddle River, NJ: Prentice Hall.

Marieb, E. N. (2003). *Essentials of Human Anatomy and Physiology*, 7th ed. Upper Saddle River, NJ: Pearson/Prentice Hall.

Meyer, J., and Schiff, M. (2004). *HIPAA: The Questions You Didn't Know to Ask*. Upper Saddle River, NJ: Prentice Hall.

Mulvihill, M., Zelman, M., Holdaway, P., Tampany, E., and Turchany, T. (2001). *Human Diseases: A Systematic Approach*. Upper Saddle River, NJ: Prentice Hall.

- Patton, K. T., and Lewis, N. (eds.) (2003). *Anthony's Textbook of Anatomy and Physiology*, 17th ed. New York, NY: Elsevier/Mosby & Saunders.
- Scott, A. S., and Fong, E. (2004). *Body Structures and Functions with CD*, 10th ed. Clifton Park, NY: Delmar Learning.
- Simmers, L. (2004). *Diversified Health Occupations*, 6th ed. Clifton Park, NY: Delmar Learning.
- Simmers, L. (2004). *Health Science Career Exploration*. Clifton Park, NY: Delmar Learning.
- Simmers, L. (2004). *Introduction to Health Science Technology*. Clifton Park, NY: Delmar Learning.
- State Board for Educator Certification. (2000). *Health Science Technology Education Standards*.
- Texas Education Agency. (1998). *Texas Essential Knowledge and Skills (TEKS)*.
- Thibodeau, G. A., and Patton, K. T. (2002). *The Human Body in Health and Disease*, 3rd ed. New York, NY: Elsevier/Mosby & Saunders.
- Willis, M. C., and Kick, H. W. (2002). *Medical Terminology: A Programmed Learning Approach to the Language of Health Care*. Philadelphia, PA: Lippincott Williams & Wilkins.

Online Resources

Centers for Disease Control and Prevention. <http://www.cdc.gov>

National Consortium on Health Science and Technology Education. <http://www.nchste.org>

Texas Health Science Technology Education. <http://www.texashste.com>

University of North Texas, Government Information Connection, K–12, Health Science Technology Education. <http://www.library.unt.edu>

