

General Education Comprehensive Exam Summary:

Peregrine Academic Services (PAS) provides assessment services for performing direct assessment of learning outcomes in a range of academic disciplines. The online exams are used to evaluate retained student knowledge in relation to the academic program's learning outcomes.

This document outlines the General Education (GEN ED) assessment service used to evaluate the programmatic learning outcomes for a GEN ED curriculum.

The assessment service is designed for use by US-based schools and programs.

PAS places a high priority on ensuring the validity and reliability of the assessment services. These practices begin at the design stage and continue through beta-testing, and with ongoing regularly scheduled quality reviews. A description of the approach used to ensure ongoing validity and reliability is provided at the end of this document.

The exams include 10 questions for each topic and each exam is unique as questions are selected at random from the test bank with 50-200 questions per topic. Topic areas are selected to match the courses included within the school's or individual student's GEN ED curriculum. GEN ED exams typically include 5-10 topics.

There are two ways in which topics are selected for inclusion in exams:

- I. If a school's GEN ED curriculum is fixed (meaning all students take the same GEN ED courses) then the program manager for the institution selects the topic areas to match the design of their curriculum.
- II. If a school does not have a fixed GEN ED curriculum (meaning students select courses from a range of GEN ED domains) then Peregrine works with the institution to integrate with their Learning Management System so that each student's exam is aligned to their individual GEN ED program of study.

This document provides information on:

- Knowledge area domains, topics and the subjects covered within each topic.
- Example questions.
- Assessment Service Validity and Reliability.

The Domains and Topics are:

1. Arts and Humanities
 - 1.1. Art/Music Appreciation
 - 1.2. Ethics
 - 1.3. Logic/Critical Thinking
 - 1.4. Pop Culture, Film, and Media
 - 1.5. US History
 - 1.6. World History/Civilizations
 - 1.7. World Religions/World Cultures

2. Communications
 - 2.1. Interpersonal Communications
 - 2.2. Speech
3. Literature and Composition
 - 3.1. American Literature/World Literature
 - 3.2. English/English Composition
4. Math/Algebra
 - 4.1. Applied Calculus/Business Calculus
 - 4.2. College Algebra
 - 4.3. Mathematics/Applied Mathematics
 - 4.4. Statistical Concepts
5. Science
 - 5.1. Biology/Microbiology
 - 5.2. Chemistry
 - 5.3. Earth Science
 - 5.4. Environmental Science
 - 5.5. Microbiology
 - 5.6. Science in Society
 - 5.7. Scientific Process
6. Social and Behavior Sciences
 - 6.1. Cultural Anthropology/Sociology
 - 6.2. Economics
 - 6.3. General Psychology
 - 6.4. Political Science
 - 6.5. US Federal/American Government
 - 6.6. World Civilization
7. Technology
 - 7.1. Computer Science
 - 7.2. General Software Applications
 - 7.3. Technology Systems

DOMAIN: Arts and Humanities

Topic: Art/Music Appreciation

Subjects

- Architecture
- Art Culture and Notable Works
- Artistic Movements
- Ballet and Dance
- Cinematography and Photography
- Conductors and Composers
- Famous Pieces
- Great Artists
- History of Music
- Instruments
- Music Theory
- Musical Notation
- Styles and Themes
- Technology and Technique

Example Questions

Though they lived thousands of years and thousands of miles apart, both Mayan and Egyptian civilizations built massive _____ by stacking stone blocks to create structures with a large base that tapers to a much smaller top.

- A. city gardens
- B. elephant sculptures
- C. Ferris wheels
- D. pyramids
- E. flag poles

Correct Response: D

All of the following musical pieces are usually written in 3/4 time except (_____).

- A. waltzes
- B. minuets
- C. scherzos
- D. marches
- E. country and western ballads

Correct Response: D

Topic: Ethics

Subjects

- Corporate Social Responsibility
- Ethics and Globalization and Technology
- Foundation/Theory
- Government, Human Resource, and Marketing Ethics
- Philosophies of Ethics and Social Responsibility
- Theory and Models
- Whistleblowing

Example Questions

Which of the following defines simple truth?

- A. The concept that the moral standards we develop for ourselves impact our lives on a daily basis
- B. The concept that we must bring our personal value systems into a world that we share with people who may have different value systems
- C. Doing the right thing
- D. Viewing one's behavior from an extrinsic viewpoint
- E. Viewing one's behavior from an intrinsic viewpoint

Correct Response: C

All of the following can cause a whistleblower to lose legitimacy except (_____).

- A. motivation by financial gains
- B. motivation by media attention
- C. the employee is carrying out a personal vendetta
- D. the employee is trying to protect the public
- E. motivation for promotion

Correct Response: D

Topic: Logic/Critical Thinking

Subjects

- Foundation/Theory
- Verbal Reasoning

Example Questions

"In this area of the country, a lot of snow usually means we will have a cool summer. We have had a lot of snow this winter, even though it was not very cold. I think we will have a cool summer." These phrases make up?

- A. A deductive argument with an unstated conclusion.
- B. An inductive argument with the last sentence as a conclusion.
- C. Neither inductive nor deductive, because its conclusion is false.
- D. Not an argument at all.
- E. An inductive argument with a false conclusion.

Correct Response: B

Which word does not belong with the others?

- A. Tire
- B. Pedal
- C. Seat
- D. Handlebar
- E. Bicycle

Correct Response: E

Topic: Pop Culture, Film, and Media

Subjects

- Cinematic Concepts
- Film/Media
- Films and Critical Terms
- Pop Culture Television
- Pop Culture, Art, Characters, and Music

Example Questions

The opening minutes of a film, otherwise known as the (____), is filled with much information regarding the plot and the characters involved.

- A. peak
- B. opening credit
- C. exposition
- D. discovery
- E. backstory

Correct Response: C

On the Cosby Show, which of the children was the youngest?

- A. Rudy
- B. Vanessa
- C. Theo
- D. Denise
- E. Sondra

Correct Response: A

Topic: US History

Subjects

- 9/11 and after, 2001 to present
- American Revolution, 1776 to 1783
- Articles of Confederation and Constitution, 1783 to 1789
- Build up to Civil War, 1848 to 1861
- Civil War, 1861 to 1865
- Colonization, 1492 to 1776
- Depression and WW2, 1929 to 1945
- Early years of Republic, 1789 to 1812
- Imperial America, 1890 to 1914
- Internet age, 1991 to 2001
- Native history to 1492
- Nuclear world, 1945 to 1969
- Reconstruction and Gilded Age
- Vietnam and fall of USSR, 1969 to 1991
- War of 1812 to Great Migration, 1812 to 1848
- WW1 and Roaring 20s

Example Questions

The United States' policy of detaining terrorist suspects in Guantanamo Bay drew international criticism for their (_____).

- A. use of English to interrogate suspects
- B. incorporation of Islamic dietary restrictions
- C. training of inmates to become citizens
- D. indefinite hold without trial
- E. failure to feed and clothe the inmates

Correct Response: D

The first amendments to the Constitution have been known as what?

- A. The Dirty Dozen
- B. The Bill of Rights
- C. The Pax Americana
- D. Rural Electrification
- E. The Exclusion Clause

Correct Response: B

Topic: World History/Civilizations

Subjects

- Ancient History
- Europe
- Nineteenth-Century World History
- Twentieth-Century History
- Twenty-First Century History

Example Questions

The "Defenestration of Prague" refers to (_____).

- A. when Catholics threw Protestants out a window, starting the Hundred Years' War
- B. when Protestants threw Catholics out a window, starting the Hundred Years' War
- C. when Catholics threw Protestants out a window, starting the Thirty Years' War
- D. when Catherine de Medici had French Protestants thrown out of a window, starting the French Wars of Religion
- E. when Protestants threw Catholics out of a window, starting the Thirty Years' War

Correct Response: E

The Chartist movement was aimed at (_____).

- A. securing fair labor practices for all British men
- B. achieving universal male suffrage in Great Britain
- C. securing full voting rights for British women
- D. charting a new constitution that would allow Ireland full political autonomy
- E. granting special political privileges to Northern Ireland

Correct Response: B

Topic: World Religions/World Cultures

Subjects

- Buddhism
- Christianity
- Confucianism
- Hinduism
- Islam
- Judaism
- Shinto
- Sikhism
- Taoism/Daoism

Example Questions

Buddhism can best be described as a (_____) religion.

- A. polytheistic
- B. monotheistic
- C. nontheistic
- D. agnostic
- E. Protestant

Correct Response: C

In Confucianism, the Five Constants are also known as the (_____).

- A. Zhong
- B. Mao
- C. Dao
- D. Wuchang
- E. Wei

Correct Response: D

DOMAIN: Communications

Topic: Interpersonal Communications

Subjects

- Diversity and Cultural Differences
- Emotional Intelligence
- Foundation/Theory
- Inter/Intrapersonal Communications

Example Questions

The theory which suggests that culture shapes language and language shapes our culture is (_____).

- A. linguistic determinism
- B. linguistic relativity
- C. Sapir-Whorf hypothesis
- D. symbolic interaction theory
- E. Maslow's theory

Correct Response: C

Sally decides to quit her job and tells her boss in a crowded restaurant. Sally's decision demonstrates her understanding of which component of communication?

- A. Noise
- B. Feedback
- C. Episodes
- D. Context
- E. Filtering

Correct Response: D

Topic: Speech

Subjects

- Foundation/Theory
- Research Strategies
- Topic Preparation

Example Questions

What is the gathering called when people give prepared speeches from various aspects of the same topic?

- A. A colloquium
- B. A conference
- C. A seminar
- D. A summit
- E. A symposium

Correct Response: E

Tasha wants to use a literary quotation as supporting material in his speech on great females of the nineteenth century. The best advice for her is to (_____).

- A. keep the quote brief
- B. make sure it is long and important
- C. say “quote” and “unquote”
- D. try to find quotes that are new to the audience
- E. make sure to say where the quote comes from

Correct Response: A

DOMAIN: Literature and Composition

Topic: American Literature/World Literature

Subjects

- American Authors
- American Contemporary
- American Modernism
- American Realism
- American Renaissance
- American Romanticism
- English Literature

Example Questions

For which of his novels did Philip Roth win the 1995 National Book Award in Fiction?

- A. Letting Go
- B. Sabbath's Theater
- C. When She Was Good
- D. The Dying Animal
- E. Everyman

Correct Response: B

Which of the following published works was written by Ralph Waldo Emerson?

- A. The Catcher in the Rye
- B. The Grapes of Wrath
- C. Fahrenheit 451
- D. The Scarlet Letter
- E. Self-Reliance

Correct Response: E

Topic: English/English Composition

Subjects

- Foundation/Theory
- Grammar
- Literary Terms

Example Questions

Of the following novels by D.H. Lawrence, (_____) was later republished as *The Man Who Died*?

- A. *The Trespasser*
- B. *The Lost Girl*
- C. *The White Peacock*
- D. *The Boy in the Bush*
- E. *The Escaped Cock*

Correct Response: E

I love the look of the (_____) tree in my yard, but I don't like raking its leaves.

- A. flora
- B. symbiotic
- C. deciduous
- D. parasitic
- E. intrinsic

Correct Response: C

DOMAIN: Math/Algebra

Topic: Applied Calculus/Business Calculus

Subjects

- Data, Revenue and Cost
- Derivatives
- Integrals
- Limits and Other Functions

Example Questions

The number of online buyers in Trinidad and Tobago piqued between 2001 to 2003. Use the function $P(t) = 14.5 + 14.42 \ln t$; t is measured in years. What was the percentage of online buyers in 2003 with $t=1$?

- A. 44%
- B. 22%
- C. 14%
- D. 30.36%
- E. 106%

Correct Response: D

What is the function $f(x)$ if $f''(x) = 3x^2 + 2x$ and $f'(0) = 10$ and $f(0) = 5$?

- A. $x^3 + x^2 + 10$
- B. $6x + 2$
- C. $x^4/4 + x^3/3 + 10x$
- D. $x^4/4 + x^3/3 + 10x + 5$
- E. $x^5/20 + x^4/12 + 5x^2$

Correct Response: D

Topic: College Algebra

Subjects

- Conic sections
- Equations
- Exponents, Factoring and Imaginary Numbers
- Functions
- Linear algebra
- Logarithms
- Matrices, Sets and Series
- Probability and statistics
- Trigonometry

Example Questions

If Jason can mow the lawn in 3 hours and Tracie can mow the lawn in 5, how long will it take them to mow the lawn together?

- A. 0.5 hrs
- B. 1.9 hrs
- C. 4 hrs
- D. 5 hrs
- E. 2 hrs

Correct Response: B

Simplifying the logarithmic expression $5 \log x - 3 \log x - 10 \log x$ results in (_____).

- A. $\log x^2 - 10 \log x$
- B. $\log (x^{12})$
- C. $\log (x^{-8})$
- D. $\log (x^{18})$
- E. $\log(x^8)$

Correct Response: C

Topic: Mathematics/Applied Mathematics

Subjects

- Geometry: Shapes
- Geometry: Volume and Angles
- Inductive and deductive reasoning
- Mathematical Operations
- Measurement
- Metrics and Decimals
- Percentage
- Permutations and combinations

Example Questions

A new illuminated sign for your small business costs \$50 per square foot. Which size sign will be the least expensive?

- A. 4 feet x 8 feet
- B. 6 feet x 7 feet
- C. 6 feet x 6 feet
- D. 4 feet x 9 feet
- E. 9 feet x 3 feet

Correct Response: E

You've decided to remodel your kitchen floor yourself. To your best estimation your kitchen is $12 \frac{1}{2}$ feet by $16 \frac{1}{2}$ feet in size. The rectangular tiles you chose are 10 inches on each side and one box should cover 20 square feet. How many boxes would you need to tile your kitchen floor?

- A. 20 boxes
- B. 10 boxes
- C. 25 boxes
- D. 15 boxes
- E. 30 boxes

Correct Response: B

Topic: Statistical Concepts

Subjects

- Hypothesis testing and Correlations
- Independent and dependent variables
- Measures of central tendency
- Measures of variation
- Populations and samples
- Probability
- Representing data visually
- Statistics foundations
- Validity and reliability

Example Questions

In experimental research, the (_____) variable reflects the outcome.

- A. correlation
- B. quantitative
- C. independent
- D. discrete
- E. dependent

Correct Response: E

Ten co-workers agreed to equally split the cost of a retirement gift for your boss. When two co-workers decided to buy their own gift instead of contributing to a shared gift, the remaining gifters had to pay \$5.00 more. How much was the gift?

- A. 5
- B. 250
- C. 25
- D. 200
- E. 80

Correct Response: D

DOMAIN: Science

Topic: Biology/Microbiology

Subjects

- Cell division
- Cells
- Classification of living things
- DNA replication
- Eukaryotic genomes and gene regulation
- Genetic traits
- Macromolecules
- Plant kingdom

Example Questions

What is the first part of an organism's scientific name?

- A. Species
- B. Genus
- C. Phylum
- D. Class
- E. Kingdom

Correct Response: B

If the DNA content of a diploid cell in G1 phase of the cell cycle is n , what is the DNA content of that same cell at metaphase of meiosis?

- A. $0.25n$
- B. $0.5n$
- C. N
- D. $2n$
- E. $4n$

Correct Response: D

Topic: Chemistry

Subjects

- Atomic Structure and Carbon
- Chemical bonds
- Chemical reactions
- Energy
- Inorganic and organic compounds
- Intermolecular forces
- Measurement
- Nuclear Chemistry
- Quantitative chemistry
- Solutions
- States of matter

Example Questions

C_6H_6 is oxidized by oxygen to form CO_2 and H_2O . A compound with this formula is an example of (___).

- A. chiral compounds
- B. saturated hydrocarbons
- C. alcohols
- D. amines
- E. aromatic compounds

Correct Response: E

If a substance is hard and often water soluble, it is held together by (___) forces.

- A. ionic
- B. metallic
- C. molecular
- D. dispersion
- E. covalent

Correct Response: A

Topic: Earth Science

Subjects

- Earthquakes
- Earth's layers
- Natural resources and Gravitational Forces
- Rocks and soil
- Volcanoes
- Weather

Example Questions

Which element does not change the surface of the earth?

- A. Wind
- B. Water
- C. Gravity
- D. Centripetal force
- E. Noise

Correct Response: D

What is metamorphism?

- A. The process by which sedimentary rock forms
- B. The process by which igneous rocks forms
- C. The process that melts rocks within the earth
- D. The process which causes magma to be exposed on the earth's surface
- E. The process which forms metamorphic rocks

Correct Response: A

Topic: Environmental Science

Subjects

- Atmosphere and Climate Change
- Biodiversity
- Earth Systems
- Ecology
- Ecosystems
- Energy
- Environment & Human Health
- Food and Agriculture
- Population and Ecology
- Water, Land & Air

Example Questions

The ecosystem approach to conservation is partly based on the idea that (_____).

- A. all rare species should be relocated to regional preserves
- B. human needs are of secondary importance
- C. human needs are of secondary importance
- D. a healthy biosphere requires intact ecosystems
- E. a healthy biosphere requires intact ecosystems

Correct Response: D

What is an advantage to using fossil fuels as an energy source?

- A. Renewability
- B. Versatility
- C. Air pollution
- D. Limited quantity
- E. Toxic by-products

Correct Response: B

Topic: Microbiology

Subjects

- Archaea and Bacterial Morphology
- Fungi
- Microbes
- Microbial genetics
- Microbial metabolism
- Prokaryotes

Example Questions

Despite the many dangers posed by fungi. Which is an example of a practical use of fungi?

- A. Agent of ergotism
- B. Production of an antibiotic
- C. As parasites
- D. As pathogens
- E. As plasmogamy

Correct Response: B

(____) are used by obligate anaerobes to accept electrons during anaerobic respiration.

- A. Oxygen
- B. Carbon dioxide
- C. Sulfate ions
- D. Nitrogen
- E. Sulfur

Correct Response: C

Topic: Science in Society

Subjects

- Biology
- Chemistry
- Earth Science
- Environmental Science
- Physics

Example Questions

One of the most important things to keep down the spread of diseases is (_____).

- A. eye color
- B. DNA fingerprint
- C. Blood type
- D. Hair color
- E. Fingernail fragment

Correct Response: B

What characteristic do earthquakes that cause severe damage most likely have in common?

- A. A deep focus
- B. A deep epicenter
- C. A shallow focus
- D. A shallow epicenter
- E. An intermediate focus

Correct Response: C

Topic: Scientific Process

Subjects

- Biological Systems
- Contamination
- Discovery science
- Ethics
- Experimental approach
- Experimental design
- Science, Technology and Society
- Scientific Method and Theories

Example Questions

When blood vessels are broken, platelets accumulate at the site of the injury. This type of feedback regulation is called (___).

- A. positive response
- B. negative feedback
- C. positive feedback
- D. negative response
- E. feedback loop

Correct Response: C

Discussions are good way to advance your research. What should you do if someone offers you a good idea for an experiment?

- A. Acknowledge that person orally or in writing
- B. Pass it off as your own
- C. Modify it slightly to make it your own
- D. You don't have to acknowledge them
- E. It is not your responsibility to safeguard someone else's intellectual property

Correct Response: A

DOMAIN: Social and Behavior Sciences

Topic: Cultural Anthropology/Sociology

Subjects

- Authority
- Communication
- Deviance
- Economies
- Environments
- Governments
- Group dynamics
- Health and Medicine
- Identity
- Language
- Media and influence
- Personal Relationships
- Race and Ethnicity
- Religion
- Sex and Gender
- Social terminology
- Work

Example Questions

The popularity of Facebook's development in the mid-2000s helped launch online (_____) platforms dedicated to connecting users with friends, family, colleagues, and other contacts.

- A. radio
- B. television
- C. social media
- D. email
- E. semaphore

Correct Response: C

Though the Founding Fathers sought to put a democracy in place, it may more appropriately have been called a(n) (_____), as only a small percentage of the population -- wealthy, land-owning white men -- had voting rights.

- A. socialist state
- B. oligarchy
- C. tranny
- D. military junta
- E. progressive society

Correct Response: B

Topic: Economics

Subjects

- Contemporary Issues, Money & Banking
- Foundation/Theory
- Theories: Competition, Wage, Monopoly

Example Questions

If a government begins the year with \$20 billion of debt and, at the end of the year, the real value of the debt has fallen to \$19 billion, the government budget has (_____).

- A. officially began in a surplus
- B. officially began in deficit
- C. operated at a surplus in real terms
- D. officially and in real terms been in balance
- E. had no impact in real terms

Correct Response: C

Assume that the demand curve for iPods shifts to the right and the supply curve for iPods shift to the left, but the supply curve shifts more than the demand curve. As a result (_____).

- A. both the equilibrium price and quantity of iPods will decrease
- B. the equilibrium price of iPods will decrease; the equilibrium quantity will increase
- C. the equilibrium price of iPods may increase or decrease; the equilibrium quantity will decrease
- D. the equilibrium price of iPods will increase; the equilibrium quantity will decrease
- E. there is no change in the equilibrium price

Correct Response: D

Topic: General Psychology

Subjects

- Behavior and Biological Bases
- Consciousness
- Human Development and Sexuality
- Learning and Cognition
- Memory
- Moral Development
- Perception
- Psychology and Psychopathology
- Social Relationships and Family
- Theory and Research

Example Questions

The memory task by which information is transformed into a storable form is termed (_____).

- A. retrieval
- B. storage
- C. encoding
- D. mensuration
- E. saturation

Correct Response: C

The studies of Hubel and Wiesel noted that neurons in the visual cortex function as (_____).

- A. face detectors
- B. color detectors
- C. feature detectors
- D. modules that decode afterimages
- E. feature monitors

Correct Response: C

Topic: Political Science

Subjects

- Authors
- Basic Principles, Theory and Vocabulary
- Domestic Politics
- Foreign Politics
- Historical Events and US History
- International Relations

Example Questions

Of the following concepts in international relations, which one is associated with Samuel Huntington?

- A. Greenhouse effect
- B. End of history
- C. Clash of civilizations
- D. Clash of titans
- E. Invisible hand

Correct Response: C

After the explosion of the USS Maine on February 15, 1898, on which country did the United States declare war?

- A. Cuba
- B. Mexico
- C. Canada
- D. Portugal
- E. Spain

Correct Response: E

Topic: US Federal/American Government

Subjects

- American Federalism
- Basic Principles and Theory
- Constitutional Foundations
- Democracy, Influential Laws and Policies
- Famous Persons/Relevant Authors
- Federal Entities and Intergovernmental Relations
- Supreme Court Decisions

Example Questions

What group is responsible for publishing the Declaration of Independence?

- A. Senate
- B. Continental Congress
- C. 13 colonies
- D. George Washington
- E. House of Representatives

Correct Response: B

Which of the following Supreme Court decisions established that the Bill of Rights also applied not only to the national government, but also the states?

- A. Gibbons v. Ogden
- B. Gitlow v. New York
- C. Miranda v. Arizona
- D. Barron v. Baltimore
- E. McCulloch v. Madison

Correct Response: B

Topic: World Civilization

Subjects

- Ancient Society/Culture
- Basic Principles and Philosophy
- Dynasties and Empires
- Greek Culture/Mythology
- Historical Documents, Events and Figures
- Important Locations and Persons/Authors
- Religions of the World
- Vocabulary

Example Questions

What dynasty ruled during the "golden age" of Chinese civilization?

- A. Qin
- B. Han
- C. Sui
- D. Tang
- E. Cheng

Correct Response: D

(____) is one country's control over the political, economic, and/or cultural livelihood of another country.

- A. Racism
- B. Bullying
- C. Liberalism
- D. Fascism
- E. Imperialism

Correct Response: E

DOMAIN: Technology

Topic: Computer Science

Subjects

- Communications and Online Society
- Computer Systems
- Hardware
- Internet
- Maintenance
- Multimedia
- Networking
- Security
- Software
- Text

Example Questions

Sam wants to buy a new PC and Sally tells him to buy at least a dual core processor machine because it can multitask. Sam agrees, but tells Sally all modern computers multitask so that is not an issue. Why?

- A. Modern operating systems multitask by switching between tasks so fast it looks as if the system is doing multiple things simultaneously.
- B. Modern operating systems require at least a dual core processor in order to perform multitasking.
- C. Dual core processors allow the operating system to work on two tasks simultaneously, as well as having each core multitask.
- D. To prolong the life of the CPU, operating systems use dual core processors by running a task on one processor until the task finishes, then running the next task on the other core.
- E. Operating systems move the load from one core to the other core when one core gets too hot.

Correct Response: C

For best performance, the relative humidity of the room should be above 20 percent and below (_____) when storing a computer.

- A. the dew-point
- B. the outside temperature
- C. the room temperature
- D. the heat index
- E. freezing

Correct Response: A

Topic: General Software Applications

Subjects

- Basic Principles
- Multimedia and Internet
- Software

Example Questions

Cable providers such as Time Warner provide services to whole neighborhoods, in such situations a user might see slower response times from web sites in the evening compared to earlier in the day. Why?

- A. The cable customers are all sharing the bandwidth to the neighborhood, and more users are active meaning each has a smaller piece of the overall supply.
- B. The cable company is deliberately slowing things down to force users to buy more expensive products.
- C. The cable company is doing maintenance late in the day to prepare for evening loads and the maintenance slows performance.
- D. The network web servers that centrally located in New York are inundated with requests and cannot respond.
- E. The computers in a neighborhood are combining together into a workgroup to make file downloads of movies faster.

Correct Response: A

A scanner is an (_____) device?

- A. Output
- B. Input
- C. Internal
- D. External
- E. Processing

Correct Response: A

Topic: Technology Systems

Subjects

- Network
- Operating Systems
- Security and Process Management
- Storage and Cloud Computing

Example Questions

VPN cannot be classified by?

- A. OSI layer they present to the connecting network
- B. Type of connectivity
- C. Protocols used to tunnel traffic
- D. Memory usage
- E. Tunnel's termination point

Correct Response: D

How many program counters does multi-threaded process have per thread?

- A. One
- B. Two
- C. Three
- D. Four
- E. Vary

Correct Response: A

Assessment Service Validity and Reliability

Introduction

The programmatic assessment services provided by Peregrine Academic Services (PAS) are used to assess retained knowledge of students at various academic degree levels. Schools deploy these services to evaluate the effectiveness of their academic programs, identify areas for improvement, and demonstrate program outcomes to external stakeholders.

PAS places a high priority on ensuring the validity and reliability of the assessment services. These practices begin at the design stage and continue through beta-testing, and with ongoing regularly scheduled quality reviews. The following outlines the approaches used to ensure ongoing validity and reliability.

Validity refers to the extent to which the test banks and the services measure the phenomena under consideration.

Reliability refers to the extent to which the exam results are repeatable and therefore data sets can be compared over time.

Design Features that Impact Validity and Reliability

The following features apply to all assessment services.

- Exam scoring is 100% objective using automated marking.
- Each exam viewed by a student is unique using a random selection of questions from the test bank in random topic order.
- Timed response periods for questions. When the user navigates away from the exam screen, the screen fades, a message appears informing the user that he/she has left the exam window and the questions are timed.
- Students are unable to copy/paste from the exam window.
- The exam services meet the security requirements for Management of Information Technology (MIS) Sarbanes-Oxley (SOX) compliant organizations.
- Abandoned exams are excluded from summary reports.

Ensuring Ongoing Validity and Reliability

Validity

To ensure test bank validity, the following measures were adopted when the initial test banks were created. The same principles are used with subsequent changes to the test banks.

- The specific accreditation or certification requirements related to learning outcomes evaluation were used to determine the topics and subjects for the test banks.
- Current teachings for each topic were considered regarding the foundational level of each test bank.
- Exam questions were written and reviewed by academic professionals within each discipline. Similar subject matter experts are used with subsequent editing and for new questions.
- Each topic has questions designated for 4-8 subjects per topic to help ensure appropriate breadth of coverage and allow for specific learning outcomes measurement.
- Exam responses are either correct or incorrect with only one possible correct choice. Scores are determined by summarizing the percent correct: per subject, per topic, and by total score.

Reliability

PAS contracted with external experts to design a comprehensive and statistically sound approach to measuring assessment service reliability. The result is that each year, a *Reliability Report* is generated for each assessment service. The report generates data for several reliability metrics and the data for each are compared with acceptability criteria to determine which test questions should be modified or replaced. Subject matter experts in the field are then contracted to modify/replace the targeted questions. Hence, the assessment service is regularly reviewed and improved to ensure ongoing reliability.

Reliability is determined by measuring *Item Difficulty*, *Item Discrimination* and *Question Interchangeability*.

Item Difficulty refers to percentage of students who answer questions correctly. Data are generated by topic and for each individual question. The target Item Difficulty is 60 percent correct with an acceptable range of 35 – 80 percent.

Item Discrimination refers to how well a question distinguishes between those students with more knowledge (higher overall exam scores) from those with less knowledge. Two measures are used: *Discrimination Index* and *Point-Biserial Correlation*.

For a given question, the Discrimination Index compares the scores of students with high overall test scores with students with low overall test scores. The scale is -1 to +1, with higher values indicating that a given question better distinguishes between high and low performing students. A value of ≥ 0.20 is considered acceptable.

Point-Biserial Correlation is equal to the Pearson's Correlation Coefficient between the scores on the entire exam and the scores on a specific question. A score of ≥ 0.10 is considered acceptable.

When assessing the quality of questions, both the Discrimination Index and the Point-Biserial Correlation Coefficient are reviewed.

Question Interchangeability refers to the ability to substitute a question in the test bank with another without significantly affecting the total score that an individual would receive on the exam. This is determined using Cohen's Effect Size d calculated based on a two-tailed t -test comparing the total score for all students who had that question in their exam versus the total score of the students who did not have that question in their exam. The scale is 0-1.0 and a score of < 0.20 is considered acceptable.