CLEP® Information Systems

AT A GLANCE

Description of the Examination

The Information Systems examination covers material that is usually taught in an introductory college-level business information systems course. Questions test knowledge, terminology, and basic concepts about information systems as well as the application of that knowledge. The exam doesn't emphasize the details of hardware design and language-specific programming techniques. References to applications such as word processing or spreadsheets don't require knowledge of a specific product. The focus is on concepts and techniques applicable to a variety of products and environments. Knowledge of arithmetic and mathematics equivalent to that of a student who has successfully completed a traditional first-year high school algebra course is assumed.

The exam contains approximately 100 questions to be answered in 90 minutes. Some of these are pretest questions and won't be scored. The time candidates spend on tutorials and providing personal information is in addition to the actual testing time.

Information Systems textbooks differ on the precise definition of the systems development process or life cycle. To avoid ambiguity, CLEP defines the systems development process as consisting of the following discrete phases or stages:

1. Planning
2. Analysis
3. Design
4. Implementation
5. Maintenance

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Knowledge and Skills Required

Questions on the Information Systems exam require test takers to demonstrate knowledge of the following content. The percentage next to each main topic indicates the approximate percentage of exam questions on that topic.

20% OFFICE AND TECHNOLOGY APPLICATIONS

- Productivity software (word processing, spreadsheet, presentation package, database package, suites)

- Office systems (email, conferencing, collaborative work, document imaging/OCR, system resources, voice recognition systems)

- Specialized systems (knowledge management, expert systems, TPS/OLTP, DSS, GIS, BI/OLAP)

- E-commerce (EDI, standards, tools, characteristics, types of transactions, business models)

- Enterprise-wide systems (ERP, CRM, SCM)

- Business strategies (competition, process reengineering, process modeling, TQM, workflow management, project management)

- Information processing methods (realtime, transaction, batch)

15% INTERNET AND WORLD WIDE WEB

- Online networks (intranet, extranet, governance, Internet content)

- Online services (search engines, cloud storage, content streaming)

- Communications (protocols, push/pull, Web 2.0)

- Web browsers (URLs, protocols, standards, history, cookies, resource allocation, functionality)

- Web technologies (HTML/CSS, XML, Javascript, web architectures)

- Website development (analysis, design, functionality, accessibility)

10%–15% SECURITY

- Malware (viruses, worms, Trojan horses, ransomware, adware, spyware, scareware, denial of service)

- Privacy concerns (individual, business, identity theft)

- Management and controls (authorization and authentication, system access, database security, secure transactions, remote data access, devices, applications)

- Disaster recovery (purpose, planning, types of disasters, recovery)

15% HARDWARE AND SYSTEMS TECHNOLOGY

- Devices (processing, storage, input and output, telecommunications, networking, Internet of things)

- Functions (computer, operating systems, telecommunications, network hardware)

- Network architectures (LAN, WAN, PAN, VPN, enterprise)

- Computer architectures (mainframe, personal computer, client/server, workstation, supercomputer)

- Wireless technologies (Wi-Fi, cellular, satellite, GPS, RFID, Bluetooth)

10% SOFTWARE DEVELOPMENT

- Methodologies (prototyping, SDLC, RAD, CASE, JAD, agile, spiral)

- Processes (feasibility, systems analysis, systems design, end-user development)

- Implementation (testing, training, data conversion, system conversion, system maintenance, post-implementation activities, documentation)

- Standards (proprietary, open source, purpose)

15% PROGRAMMING CONCEPTS AND DATA MANAGEMENT

- Management (data warehousing, data mining, big data, validation, migration, storage, obsolescence)

- Data (concepts, types, structures, digital representation of data, data transfer)

- File organization (types, structures, memory management, file management)

- Database management systems (relational, hierarchical, network, management strategies, data access)

- Programming logic (Boolean, arithmetic, SQL)

- Methodologies (object-oriented, structured)

10%–15% SOCIAL AND ETHICAL IMPLICATIONS AND ISSUES

- Economic and business decisions (outsourcing, insourcing, offshoring, green computing, investment in technology)

- Property rights (intellectual, legal, ownership of materials, open-source software/hardware)

- Effects of information technology on jobs (telecommuting, virtual teams, job design, staffing, ergonomics)

- Careers in IS (responsibilities, occupations, career path, certification)

- Social networking (benefits, risks, ethics, technology)

Study Resources

Most textbooks used in college-level introductory business information systems or information technology courses cover the knowledge and skills in the outline above. The approach to certain topics and the emphasis given to them differ; therefore, it's advisable to study one or more current college textbooks to prepare for the Information Systems exam. When selecting a textbook, check the table of contents against the knowledge and skills required for this test.

A recent survey conducted by CLEP found that the following textbooks are among those used by college faculty who teach the equivalent course. You might find one or more of these for sale online or at your local college bookstore. HINT: Look at the table of contents first to make sure it covers the topics required for this exam.

Beekman, *Tomorrow's Technology and You* (Prentice Hall)
Huber, *Information Systems: Creating Business Value* (Wiley)
Laudon, *Essentials of Business Information Systems* (Pearson)
O'Brien, *Introduction to Information Systems* (McGraw-Hill)
Rainer and Cegielski, *Introduction to Information Systems* (Wiley)
Stair, *Principles of Information Systems* (Cengage Learning)

Online Resources

These resources, compiled by the CLEP test development committee and staff members, may help you study for your exam. However, none of these sources are designed specifically to provide preparation for a CLEP exam. College Board has no control over their content and cannot vouch for accuracy.

Free online CLEP Information Systems course offered by Modern States Education Alliance: **modernstates.org/course/information-systems/**

Visit **clep.collegeboard.org/earn-college-credit/practice** for additional study resources. You can also find suggestions for exam preparation in Chapter IV of the *CLEP Official Study Guide*. In addition, many college faculty post their course materials on their schools' websites.

Sample Test Questions

The following sample questions don't appear on an actual CLEP exam. They're intended to give potential test takers an indication of the format and difficulty level of the exam and to provide content for practice and review. For more sample questions and information about the test, see the *CLEP Official Study Guide*.

1. Which of the following is NOT true about virtual private networks?
   A. They use encryption.
   B. They use a public network such as the Internet.
   C. They transmit data at a greater speed than a local area network.
   D. They are less costly than a regular private network.
   E. They provide a way to connect to a remote computer.

2. Expert systems have been most successful when the range of the human expertise being replicated is
   A. narrow and deep
   B. narrow and shallow
   C. broad and deep
   D. broad and shallow
   E. broad and narrow

3. Which of the following should be taken into consideration in ergonomic design?
   I. Adapting the computer hardware to be comfortable to use
   II. Adapting the office furniture to protect the health of the worker
   III. Adapting the computer software to be easy to learn
       A. I only
       B. II only
       C. III only
       D. I and II only
       E. I, II, and III

4. Which of the following best describes data warehousing?

A. Backing up an organization's data to an offsite location
B. Moving data that have not been accessed for some time to an alternate storage system
C. Compiling and storing organization-wide data to assist in decision making
D. Validating all customer data
E. Storing all of an organization's data in two dimensional tables

5. Which of the following is NOT a risk associated with outsourcing information systems functions?

A. Loss of control of functionality
B. Loss of control of critical in-house knowledge
C. Compromising sensitive company data
D. Inability to easily sever the outsourcing relationship
E. Inability to obtain expertise from outside the company

6. For TCP/IP, what Internet function does IP enable?

A. Transfers of various file types in real time
B. Retrieval of all e-mail types and file attachments
C. Synchronized data packet connections
D. Asynchronous ordering of incoming packets
E. A unique system of addresses for message delivery

7. Which of the following is (are) true about object-oriented programming?

I. Once defined, a class can be reused to build different objects.
II. Instructions can be directly understood by the CPU without translation.
III. An object can contain both data and instructions.

A. I only
B. II only
C. III only
D. I and III only
E. I, II, and III

8. Which of the following statements about EDI Credit Recommendations is FALSE?

A. EDI documents contain the same information that would be found in paper documents.
B. EDI provides the infrastructure for both voice and data communication.
C. EDI standards are industry specific.
D. EDI enables the digital transmission of invoices.
E. EDI can be used to automate inventory replenishment.

9. Asking a group of users to evaluate the functionality of a prelaunch graphical user interface occurs during which phase of the systems development process?

A. Analysis
B. Design
C. Implementation
D. Maintenance
E. Planning

10. A spreadsheet has values 1, 2, 3, and 4, respectively, in cells A1, B1, A2, and B2. Cell C1 contains the formula "= A1 + B1." If the formula in cell C1 is copied to cell C2, what value is displayed in cell C2?

A. 3
B. 4
C. 5
D. 6
E. 7

Credit Recommendations

The American Council on Education (ACE) has recommended that colleges grant three credits for a score of 50, which is equivalent to a course grade of C, on the Information Systems exam. Each college, however, is responsible for setting its own policy. For candidates with satisfactory scores on the Information Systems exam, colleges may grant credit toward fulfillment of a distribution requirement, or for a particular course that matches the exam in content. Check with your school to find out the score it requires for granting credit, the number of credit hours granted, and the course that can be bypassed with a passing score.

Answers to Sample Questions:
1-C; 2-A; 3-D; 4-C; 5-E; 6-E; 7-D; 8-B; 9-B; 10-C