



**CISSP<sup>®</sup>**

## Candidate Information Bulletin

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1) ACCESS CONTROL.....	6
Overview .....	6
Key Areas of Knowledge .....	6
2) TELECOMMUNICATIONS AND NETWORK SECURITY .....	8
Overview .....	8
Key Areas of Knowledge .....	8
3) INFORMATION SECURITY GOVERNANCE & RISK MANAGEMENT .....	10
Overview .....	10
Key Areas of Knowledge .....	10
4) SOFTWARE DEVELOPMENT SECURITY .....	13
Overview .....	13
Key Areas of Knowledge .....	13
5) CRYPTOGRAPHY .....	14
Overview .....	14
Key Areas of Knowledge .....	14
6) SECURITY ARCHITECTURE & DESIGN .....	16
Overview .....	16
Key Areas of Knowledge .....	16
7) OPERATIONS SECURITY .....	18
Overview .....	18
Key Areas of Knowledge .....	18
8) BUSINESS CONTINUITY & DISASTER RECOVERY PLANNING .....	20
Overview .....	20
Key Areas of Knowledge .....	21
9) LEGAL, REGULATIONS, INVESTIGATIONS AND COMPLIANCE .....	22
Overview .....	22
Key Areas of Knowledge .....	22
10) PHYSICAL (ENVIRONMENTAL) SECURITY .....	24



Overview .....	24
Key Areas of Knowledge .....	24
REFERENCES .....	26
SAMPLE EXAM QUESTIONS .....	31
GENERAL EXAMINATION INFORMATION .....	32
Paper Based Test (PBT) .....	32
Any questions? .....	35
GENERAL EXAMINATION INFORMATION .....	36
GENERAL EXAMINATION INFORMATION .....	36
Computer Based Testing (CBT) .....	36
Registering for the Exam .....	36
Scheduling a Test Appointment .....	37
Non Disclosure .....	40
Day of the Exam .....	40
Any questions? .....	43



The Certified Information Systems Security Professional (CISSP) is an information assurance professional who has demonstrated a globally recognized level of competence provided by a common body of knowledge that defines the architecture, design, management, risk and controls that assure the security of business environments.

This Candidate Information Bulletin provides the following:

- Exam blueprint to a limited level of detail that outlines major topics and sub- topics within the domains,
- Suggested reference list,
- Description of the format of the items on the exam, and
- Basic registration/administration policies

Candidates **must meet** the following requirements prior to taking the CISSP examination:

- Submit the examination fee
- Applicants must have a minimum of five years of direct full-time security professional work experience in two or more of the ten domains of the (ISC)<sup>2</sup> CISSP® CBK® or four years of direct full-time security professional work experience in two or more of the ten domains of the CISSP® CBK® with a four-year college degree. Only one year experience exemption is granted for education.
- Attest to the truth of his or her assertions regarding professional experience, and legally commit to abide by the (ISC)<sup>2</sup> Code of Ethics (Section 3).
- Before candidates are allowed to take the test at testing centers, they must respond "yes" or "No" to the following four questions regarding criminal history and related background:
  1. Have you ever been convicted of a felony; a misdemeanor involving a computer crime, dishonesty, or repeat offenses; or a Court Martial in military service, or is there a felony charge, indictment, or information now pending against you? (Omit minor traffic violations and offenses prosecuted in juvenile court).
  2. Have you ever had a professional license, certification, membership or registration revoked, or have you ever been censured or disciplined by any professional organization or government agency?
  3. Have you ever been involved, or publicly identified, with criminal hackers or hacking?
  4. Have you ever been known by any other name, alias, or pseudonym? (You need not include user identities or screen names with which you were publicly identified).



CISSP professional experience includes but is not limited to:

- Work requiring special education or intellectual attainment, usually including a liberal education or college degree.
- Work requiring habitual memory of a body of knowledge shared by others doing similar work.
- Management/supervision of projects and/or employees.
- Work requiring the exercise of judgment, management decision-making, and discretion.
- Work requiring the exercise of ethical judgment (as opposed to ethical behavior).
- Professional writing and oral communication (e.g., presentation).
- Teaching, instructing, training and the mentoring of others.
- Research and development.
- The specification and selection of controls and mechanisms (i.e. identification and authentication technology- does not include the mere operation of these controls).
- Applicable job title examples are: CISO, Director, Manager, Supervisor, Analyst, Cryptographer, Cyber Architect, Information Assurance Engineer, Instructor, Professor, Lecturer, Investigator, Computer Scientist, Program Manager, Lead, etc.



## 1) ACCESS CONTROL

### Overview

Access Control domain covers mechanisms by which a system grants or revokes the right to access data or perform an action on an information system.

Access Control systems include:

- File permissions, such as "create," "read," "edit," or "delete" on a file server.
- Program permissions, such as the right to execute a program on an application server.
- Data rights, such as the right to retrieve or update information in a database.

CISSP candidates should fully understand access control concepts, methodologies and their implementation within centralized and decentralized environments across an organization's computing environment.

### Key Areas of Knowledge

#### A. Control access by applying the following concepts/methodologies/techniques

- A.1 Policies
- A.2 Types of controls (preventive, detective, corrective, etc.)
- A.3 Techniques (e.g., non-discretionary, discretionary and mandatory)
- A.4 Identification and Authentication
- A.5 Decentralized/distributed access control techniques
- A.6 Authorization mechanisms
- A.7 Logging and monitoring

#### B. Understand access control attacks

- B.1 Threat modeling
- B.2 Asset valuation
- B.3 Vulnerability analysis
- B.4 Access aggregation



**C. *Assess effectiveness of access controls***

C.1 User entitlement

C.2 Access review & audit

**D. *Identity and access provisioning lifecycle (e.g., provisioning, review, revocation)***



## 2) TELECOMMUNICATIONS AND NETWORK SECURITY

### Overview

The Telecommunications and Network Security domain encompasses the structures, techniques, transport protocols, and security measures used to provide integrity, availability, confidentiality and authentication for transmissions over private and public communication networks.

The candidate is expected to demonstrate an understanding of communications and network security as it relates to data communications in local area and wide area networks, remote access, internet/intranet/extranet configurations. Candidates should be knowledgeable with network equipment such as switches, bridges and routers, as well as networking protocols (e.g., TCP/IP, IPSec), and VPNs.

### Key Areas of Knowledge

#### **A. Understand secure network architecture and design (e.g., IP & non-IP protocols, segmentation)**

- A.1 OSI and TCP/IP models
- A.2 IP networking
- A.3 Implications of multi-layer protocols

#### **B. Securing network components**

- B.1 Hardware (e.g., modems, switches, routers, wireless access points)
- B.2 Transmission media (e.g., wired, wireless, fiber)
- B.3 Network access control devices (e.g., firewalls, proxies)
- B.4 End-point security

#### **C. Establish secure communication channels (e.g., VPN, TLS/SSL, VLAN)**

- C.1 Voice (e.g., POTS, PBX, VoIP)
- C.2 Multimedia collaboration (e.g., remote meeting technology, instant messaging)
- C.3 Remote access (e.g., screen scraper, virtual application/desktop, telecommuting)





C.4 Data communications

***D. Understand network attacks (e.g., DDoS, spoofing)***



### 3) INFORMATION SECURITY GOVERNANCE & RISK MANAGEMENT

#### Overview

The Information Security Governance and Risk Management domain entails the identification of an organization's information assets and the development, documentation, implementation and updating of policies, standards, procedures and guidelines that ensure confidentiality, integrity, and availability. Management tools such as data classification, risk assessment, and risk analysis are used to identify threats, classify assets, and to rate their vulnerabilities so that effective security measures and controls can be implemented.

The candidate is expected to understand the planning, organization, roles and responsibilities of individuals in identifying and securing organization's information assets; the development and use of policies stating management's views and position on particular topics and the use of guidelines, standards, and procedures to support the policies; security training to make employees aware of the importance of information security, its significance, and the specific security-related requirements relative to their position; the importance of confidentiality, proprietary and private information; third party management and service level agreements related to information security; employment agreements, employee hiring and termination practices, and risk management practices and tools to identify, rate, and reduce the risk to specific resources

#### Key Areas of Knowledge

**A. Understand and align security function to goals, mission and objectives of the organization**

**B. Understand and apply security governance**

- B.1 Organizational processes (e.g., acquisitions, divestitures, governance committees)
- B.2 Security roles and responsibilities
- B.3 Legislative and regulatory compliance
- B.4 Privacy requirements compliance
- B.5 Control frameworks
- B.6 Due care



B.7 Due diligence

***C. Understand and apply concepts of confidentiality, integrity and availability***

***D. Develop and implement security policy***

- D.1 Security policies
- D.2 Standards/baselines
- D.3 Procedures
- D.4 Guidelines
- D.5 Documentation

***E. Manage the information life cycle (e.g., classification, categorization, and ownership)***

***F. Manage third-party governance (e.g., on-site assessment, document exchange and review, process/policy review)***

***G. Understand and apply risk management concepts***

- G.1 Identify threats and vulnerabilities
- G.2 Risk assessment/analysis (qualitative, quantitative, hybrid)
- G.3 Risk assignment/acceptance
- G.4 Countermeasure selection
- G.5 Tangible and intangible asset valuation

***H. Manage personnel security***

- H.1 Employment candidate screening (e.g., reference checks, education verification)
- H.2 Employment agreements and policies
- H.3 Employee termination processes
- H.4 Vendor, consultant and contractor controls

***I. Develop and manage security education, training and awareness***

***J. Manage the Security Function***

- J.1 Budget
- J.2 Metrics



- J.3 Resources
- J.4 Develop and implement information security strategies
- J.5 Assess the completeness and effectiveness of the security program



## 4) SOFTWARE DEVELOPMENT SECURITY

### Overview

Software Development Security domain refers to the controls that are included within systems and applications software and the steps used in their development (e.g., SDLC).

Software refers to system software (operating systems) and application programs such as agents, applets, software, databases, data warehouses, and knowledge-based systems. These applications may be used in distributed or centralized environments.

The candidate should fully understand the security and controls of the systems development process, system life cycle, application controls, change controls, data warehousing, data mining, knowledge-based systems, program interfaces, and concepts used to ensure data and application integrity, security, and availability.

### Key Areas of Knowledge

#### **A. Understand and apply security in the software development life cycle**

- A.1 Development Life Cycle
- A.2 Maturity models
- A.3 Operation and maintenance
- A.4 Change management

#### **B. Understand the environment and security controls**

- B.1 Security of the software environment
- B.2 Security issues of programming languages
- B.3 Security issues in source code (e.g., buffer overflow, escalation of privilege, backdoor)
- B.4 Configuration management

#### **C. Assess the effectiveness of software security**

- C.1 Certification and accreditation (i.e., system authorization)
- C.2 Auditing and logging
- C.3 Risk analysis and mitigation



## 5) CRYPTOGRAPHY

### Overview

The Cryptography domain addresses the principles, means, and methods of applying mathematical algorithms and data transformations to information to ensure its integrity, confidentiality and authenticity.

The candidate is expected to know basic concepts within cryptography; public and private key algorithms in terms of their applications and uses; algorithm construction, key distribution and management, and methods of attack; the applications, construction and use of digital signatures to provide authenticity of electronic transactions, and non-repudiation of the parties involved; and the organization and management of the Public Key Infrastructures (PKIs) and digital certificates distribution and management.

### Key Areas of Knowledge

#### **A. Understand the application and use of cryptography**

- A.1 Data at rest (e.g., Hard Drive)
- A.2 Data in transit (e.g., On the wire)

#### **B. Understand the cryptographic life cycle (e.g., cryptographic limitations, algorithm/protocol governance)**

#### **C. Understand encryption concepts**

- C.1 Foundational concepts
- C.2 Symmetric cryptography
- C.3 Asymmetric cryptography
- C.4 Hybrid cryptography
- C.5 Message digests
- C.6 Hashing

#### **D. Understand key management processes**

- D.1 Creation/distribution
- D.2 Storage/destruction
- D.3 Recovery



D.4 Key escrow

***E. Understand digital signatures***

***F. Understand non-repudiation***

***G. Understand methods of cryptanalytic attacks***

G.1 Chosen plain-text

G.2 Social engineering for key discovery

G.3 Brute Force (e.g., rainbow tables, specialized/scalable architecture)

G.4 Cipher-text only

G.5 Known plaintext

G.6 Frequency analysis

G.7 Chosen cipher-text

G.8 Implementation attacks

***H. Use cryptography to maintain network security***

***I. Use cryptography to maintain application security***

***J. Understand Public Key Infrastructure (PKI)***

***K. Understand certificate related issues***

***L. Understand information hiding alternatives (e.g., steganography, watermarking)***



## 6) SECURITY ARCHITECTURE & DESIGN

### Overview

The Security Architecture & Design domain contains the concepts, principles, structures, and standards used to design, implement, monitor, and secure, operating systems, equipment, networks, applications, and those controls used to enforce various levels of confidentiality, integrity, and availability.

Information security architecture and design covers the practice of applying a comprehensive and rigorous method for describing a current and/or future structure and behavior for an organization's security processes, information security systems, personnel and organizational sub-units, so that these practices and processes align with the organization's core goals and strategic direction.

The candidate is expected to understand security models in terms of confidentiality, integrity, data flow diagrams; Common Criteria (CC) protection profiles; technical platforms in terms of hardware, firmware, and software; and system security techniques in terms of preventative, detective, and corrective controls.

### Key Areas of Knowledge

- A. Understand the fundamental concepts of security models (e.g., Confidentiality, Integrity, and Multi-level Models)**
- B. Understand the components of information systems security evaluation models**
  - B.1 Product evaluation models (e.g., common criteria)
  - B.2 Industry and international security implementation guidelines (e.g., PCI-DSS, ISO)
- C. Understand security capabilities of information systems (e.g., memory protection, virtualization, trusted platform module)**
- D. Understand the vulnerabilities of security architectures**
  - D.1 System (e.g., covert channels, state attacks, emanations)
  - D.2 Technology and process integration (e.g., single point of failure, service oriented architecture)





***E. Understand software and system vulnerabilities and threats***

- E.1 Web-based (e.g., XML, SAML, OWASP)
- E.2 Client-based (e.g., applets)
- E.3 Server-based (e.g., data flow control)
- E.4 Database security (e.g., inference, aggregation, data mining, warehousing)
- E.5 Distributed systems (e.g., cloud computing, grid computing, peer to peer)

***F. Understand countermeasure principles (e.g., defense in depth)***



## 7) OPERATIONS SECURITY

### Overview

Security Operations domain is used to identify critical information and the execution of selected measures that eliminate or reduce adversary exploitation of critical information. It includes the definition of the controls over hardware, media, and the operators with access privileges to any of these resources. Auditing and monitoring are the mechanisms, tools and facilities that permit the identification of security events and subsequent actions to identify the key elements and report the pertinent information to the appropriate individual, group, or process.

The candidate is expected to know the resources that must be protected, the privileges that must be restricted, the control mechanisms available, the potential for abuse of access, the appropriate controls, and the principles of good practice.

### Key Areas of Knowledge

#### A. Understand security operations concepts

- A.1 Need-to-know/least privilege
- A.2 Separation of duties and responsibilities
- A.3 Monitor special privileges (e.g., operators, administrators)
- A.4 Job rotation
- A.5 Marking, handling, storing and destroying of sensitive information
- A.6 Record retention

#### B. Employ resource protection

- B.1 Media management
- B.2 Asset management (e.g., equipment life cycle, software licensing)

#### C. Manage incident response

- C.1 Detection
- C.2 Response
- C.3 Reporting
- C.4 Recovery



C.5 Remediation and review (e.g., root cause analysis)

*D. Implement preventative measures against attacks (e.g., malicious code, zero-day exploit, denial of service)*

*E. Implement and support patch and vulnerability management*

*F. Understand change and configuration management (e.g., versioning, baselining)*

*G. Understand system resilience and fault tolerance requirements*



## 8) BUSINESS CONTINUITY & DISASTER RECOVERY PLANNING

### Overview

The Business Continuity and Disaster Recovery Planning domain addresses the preservation of the business in the face of major disruptions to normal business operations. BCP and DRP involve the preparation, testing and updating of specific actions to protect critical business processes from the effect of major system and network failures.

Business Continuity Planning (BCP) helps to identify the organization's exposure to internal and external threats; synthesize hard and soft assets to provide effective prevention and recovery for the organization, and maintains competitive advantage and value system integrity. BCP counteracts interruptions to business activities and should be available to protect critical business processes from the effects of major failures or disasters. It deals with the natural and man-made events and the consequences, if not dealt with promptly and effectively.

Business Impact Analysis (BIA) determines the proportion of impact an individual business unit would sustain subsequent to a significant interruption of computing or telecommunication services. These impacts may be financial, in terms of monetary loss, or operational, in terms of inability to deliver.

Disaster Recovery Plans (DRP) contain procedures for emergency response, extended backup operation and post-disaster recovery, should a computer installation experience a partial or total loss of computer resources and physical facilities. The primary objective of the disaster recovery plan is to provide the capability to process mission-essential applications, in a degraded mode, and return to normal mode of operation within a reasonable amount of time.

The candidate is expected to know the difference between business continuity planning and disaster recovery; business continuity planning in terms of project scope and planning, business impact analysis, recovery strategies, recovery plan development, and implementation. Moreover, the candidate should understand disaster recovery in terms of recovery plan development, implementation and restoration.



## ***Key Areas of Knowledge***

### ***A. Understand business continuity requirements***

A.1 Develop and document project scope and plan

### ***B. Conduct business impact analysis***

B.1 Identify and prioritize critical business functions

B.2 Determine maximum tolerable downtime and other criteria

B.3 Assess exposure to outages (e.g., local, regional, global)

B.4 Define recovery objectives

### ***C. Develop a recovery strategy***

C.1 Implement a backup storage strategy (e.g., offsite storage, electronic vaulting, tape rotation)

C.2 Recovery site strategies

### ***D. Understand disaster recovery process***

D.1 Response

D.2 Personnel

D.3 Communications

D.4 Assessment

D.5 Restoration

D.6 Provide training

### ***E. Exercise, assess and maintain the plan (e.g., version control, distribution)***



## 9) LEGAL, REGULATIONS, INVESTIGATIONS AND COMPLIANCE

### Overview

The Legal, Regulations, Investigations and Compliance domain addresses ethical behavior and compliance with regulatory frameworks. It includes the investigative measures and techniques that can be used to determine if a crime has been committed, and methods used to gather evidence (e.g., forensics). A computer crime is any illegal action where the data on a computer is accessed without permission. This includes unauthorized access or alteration of data, or unlawful use of computers and services. This domain also includes understanding the computer incident forensic response capability to identify the Advanced Persistent Threat (APT) that many organizations face today.

### Key Areas of Knowledge

#### **A. Understand legal issues that pertain to information security internationally**

- A.1 Computer crime
- A.2 Licensing and intellectual property (e.g., copyright, trademark)
- A.3 Import/Export
- A.4 Trans-border data flow
- A.5 Privacy

#### **B. Understand professional ethics**

- B.1 (ISC)<sup>2</sup> Code of Professional Ethics
- B.2 Support organization's code of ethics

#### **C. Understand and support investigations**

- C.1 Policy, roles and responsibilities (e.g., rules of engagement, authorization, scope)
- C.2 Incident handling and response
- C.3 Evidence collection and handling (e.g., chain of custody, interviewing)
- C.4 Reporting and documenting



***D. Understand forensic procedures***

- D.1 Media analysis
- D.2 Network analysis
- D.3 Software analysis
- D.4 Hardware/embedded device analysis

***E. Understand compliance requirements and procedures***

- E.1 Regulatory environment
- E.2 Audits
- E.3 Reporting

***F. Ensure security in contractual agreements and procurement processes (e.g., cloud computing, outsourcing, vendor governance)***



## 10) PHYSICAL (ENVIRONMENTAL) SECURITY

### Overview

The Physical (Environmental) Security domain addresses the threats, vulnerabilities, and countermeasures that can be utilized to physically protect an enterprise's resources and sensitive information. These resources include people, the facility in which they work, and the data, equipment, support systems, media, and supplies they utilize.

Physical security describes measures that are designed to deny access to unauthorized personnel (including attackers) from physically accessing a building, facility, resource, or stored information; and guidance on how to design structures to resist potentially hostile acts.

The candidate is expected to know the elements involved in choosing a secure site, its design and configuration, and the methods for securing the facility against unauthorized access, theft of equipment and information, and the environmental and safety measures needed to protect people, the facility, and its resources.

### Key Areas of Knowledge

- A. Understand site and facility design considerations**
- B. Support the implementation and operation of perimeter security (e.g., physical access control and monitoring, audit trails/access logs)**
- C. Support the implementation and operation of internal security (e.g., escort requirements/visitor control, keys and locks)**
- D. Support the implementation and operation of facilities security (e.g., technology convergence)**

- D.1 Communications and server rooms
- D.2 Restricted and work area security
- D.3 Data center security
- D.4 Utilities and Heating, Ventilation and Air Conditioning (HVAC) considerations
- D.5 Water issues (e.g., leakage, flooding)
- D.6 Fire prevention, detection and suppression

- E. Support the protection and securing of equipment**





*F. Understand personnel privacy and safety (e.g., duress, travel, monitoring)*



## REFERENCES

This reference list is **NOT** intended to be an all-inclusive collection representing the CISSP® Core Body of Knowledge (CBK®). Its purpose is to provide candidates a starting point for their studies in domains which need supplementary learning in order to complement their associated level of work and academic experience. Candidates may also consider other references, which are not on this list but adequately cover domain content.

**Note:** (ISC)<sup>2</sup> does not endorse any particular text or author and does not imply that any or all references be acquired or consulted. (ISC)<sup>2</sup> does not imply nor guarantee that the study of these references will result in an examination pass.

Domain	Supplementary Reference
Access Control	Bertino, E., K. Takahashi, (2010). <i>Identity Management: Concepts, Technologies, and Systems</i>
	Chin, S-K., S.B. Older (2010). <i>Access Control, Security, and Trust: A Logical Approach</i>
	Ferraiolo, D.F., D.R. Kuhn, R. Chandramouli, (2007). <i>Role-Based Access Control (2<sup>nd</sup> Edition)</i>
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	Rankl, W., W. Effing, (2010). <i>Smart Card Handbook</i>
	Tipton, H.F., M.K. Nozaki, (2011). <i>Information Security Management Handbook (2011 CD-ROM Edition)<sup>1</sup></i>
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Telecommunications and Network Security	Cheswick, W.R., S.M. Bellovin, A.D. Rubin, (2003). <i>Firewalls and Internet Security: Repelling the Wily Hacker (2<sup>nd</sup> Edition)</i>
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<sup>1</sup> This reference can be used for multiple domains.



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	Brotby, K., (2010). <i>Information Security Governance</i>
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	Hayden, L., (2010). <i>IT Security Metrics: A Practical Framework for Measuring Security &amp; Protecting Data</i>
	Herold, R., (2010). <i>Managing an Information Security and Privacy Awareness and Training Program, (2<sup>nd</sup> Edition)</i>
	Jaquith, A., (2007). <i>Security Metrics: Replacing Fear, Uncertainty, and Doubt</i>
	Landoll, D.J., (2005). <i>The Security Risk Assessment Handbook: A Complete Guide for Performing Security Risk Assessments</i>
	Thomas L. Norman, T.L., (2009). <i>Risk Analysis and Security Countermeasure Selection</i>
Software Development Security	Tipton, H.F., (2009). <i>Official (ISC)<sup>2</sup> Guide to the CISSP CBK, (2<sup>nd</sup> Edition)<sup>2</sup></i>
	Whitman, M.E., H.J. Mattord, (2010). <i>Management of Information Security (3<sup>rd</sup> Edition)</i>
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Ligh, M., S. Adair, B. Hartstein, M. Richard, (2010). <i>Malware Analyst's Cookbook and DVD: Tools and Techniques for Fighting Malicious Code</i>	
Stuttard, D., M. Pinto, (2007). <i>The Web Application Hacker's Handbook: Discovering and Exploiting Security Flaws</i>	

<sup>2</sup> This reference can be used for multiple domains.



Candidate Information Bulletin

Effective Date 1 January 2012

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	Challener, C., K. Yoder, R. Catherman, D. Safford, L.V. Doorn, (2008). <i>A Practical Guide to Trusted Computing</i>
	Gillis, T., (2010). <i>Securing the Borderless Network: Security for the Web 2.0 World</i>
	Higaki, W.H., Y. Higaki, (2010). <i>Successful Common Criteria Evaluations: A Practical Guide for Vendors</i>
	Kanneganti, R., P.R. Chodavarapu, (2008). <i>SOA Security</i>
	Kenan, K., (2005). <i>Cryptography in the Database: The Last Line of Defense</i>
	Petkovic, M., W. Jonker, (2010). <i>Security, Privacy, and Trust in Modern Data Management</i>
	Santos, O., (2007). <i>End-to-End Network Security: Defense-in-Depth</i>
	Shimonski, R., W. Schmied, V. Chang, T.W. Shinder, (2003). <i>Building DMZs For Enterprise Networks</i>
	Swiderski, F., W. Snyder, (2004). <i>Threat Modeling</i>

<sup>3</sup> This reference can be used for multiple domains.



Candidate Information Bulletin

Effective Date 1 January 2012

Security Operations	Aiello, R., (2010). <i>Configuration Management Best Practices: Practical Methods that Work in the Real World</i>
	Bejtlich, R., (2005). <i>Extrusion Detection: Security Monitoring for Internal Intrusions</i>
	Bosworth, S., M. E. Kabay, E. Whyne, (2009). <i>Computer Security Handbook (2 Volume Set)</i>
	Cole, E., S. Ring, (2006). <i>Insider Threat: Protecting the Enterprise from Sabotage, Spying, and Theft</i>
	Foreman, P. (2009). <i>Vulnerability Management</i>
	Fry, C., M. Nystrom, (2009). <i>Security Monitoring: Proven Methods for Incident Detection on Enterprise Networks</i>
	Hadnagy, C., (2010). <i>Social Engineering: The Art of Human Hacking</i>
	Koren, I., C.M. Krishna, (2007). <i>Fault-Tolerant Systems</i>
	Rajnovic, D., (2010). <i>Computer Incident Response and Product Security</i>
	Trost, R., (2009). <i>Practical Intrusion Analysis: Prevention and Detection for the Twenty-First Century</i>
Business Continuity and Disaster Recovery Planning	Bowman, R.H., (2008). <i>Business Continuity Planning for Data Centers and Systems: A Strategic Implementation Guide</i>
	Buffington, J., (2010). <i>Data Protection for Virtual Data Centers</i>
	Clark, T., (2005). <i>Storage Virtualization: Technologies for Simplifying Data Storage and Management</i>
	Hiles, A., P. Barnes, (2001). <i>The Definitive Handbook of Business Continuity Management</i>
	Little, D.B., D.A. Chapa, (2003). <i>Implementing Backup and Recovery: The Readiness Guide for the Enterprise</i>
	National Fire Protection Association, (2007). <i>NFPA 1600 Standard on Disaster/Emergency Management and Business Continuity</i>
	Preston, C., (2007). <i>Backup &amp; Recovery: Inexpensive Backup Solutions for Open Systems</i>
	Schmidt, K., (2010). <i>High Availability and Disaster Recovery: Concepts, Design, Implementation</i>
	Snedaker, S., (2007). <i>Business Continuity and Disaster Recovery Planning for IT Professionals</i>
	Toigo, J.W., (2002). <i>Disaster Recovery Planning: Preparing for the Unthinkable (3<sup>rd</sup> Edition)</i>
Legal, Regulations, Investigations and Compliance	Barrett, D., G. Kipper, (2010). <i>Virtualization and Forensics: A Digital Forensic Investigator's Guide to Virtual Environments</i>
	Casey, E., (2011). <i>Digital Evidence and Computer Crime, Forensic Science, Computers, and the Internet (3<sup>rd</sup> Edition)</i>
	Ermann, M.D., M.S. Shauf, (2002). <i>Computers, Ethics, and Society, (3<sup>RD</sup> Edition)</i>



Candidate Information Bulletin

Effective Date 1 January 2012

Legal, Regulations, Investigations and Compliance (cont'd)	Garner, B.A., (2009). <i>Black's Law Dictionary (9<sup>th</sup> edition)</i>
	Kuner, C., (2007). <i>European Data Protection Law: Corporate Regulation and Compliance</i>
	Mather, T., S. Kumaraswamy, S. Latif, (2009). <i>Cloud Security and Privacy</i>
	Moeller, R.R., (2010). <i>IT Audit, Control, and Security (2 Edition)</i>
	Nissenbaum, H., (2009). <i>Privacy in Context: Technology, Policy, and the Integrity of Social Life</i>
	Proise, C., K. Mandia, (2003). <i>Incident Response and Computer Forensics (2<sup>nd</sup> Edition)</i>
	Van Lindberg, V., (2008). <i>Intellectual Property and Open Source: A Practical Guide to Protecting Code</i>
Physical (Environmental) Security	Alger, D., (2005). <i>Build the Best Data Center Facility for Your Business</i>
	Arata, A., (2005). <i>Perimeter Security</i>
	Damjanovski, V., (2005). <i>CCTV, Networking and Digital Technology, (2<sup>nd</sup> Edition)</i>
	Fennelly, L., (2003). <i>Effective Physical Security, (3<sup>rd</sup> Edition)</i>
	Garcia, M.L., (2005). <i>Vulnerability Assessment of Physical Protection Systems</i>
	Khairallah, M., (2005). <i>Physical Security Systems Handbook: The Design and Implementation of Electronic Security Systems</i>
	Nilsson, F., (2008). <i>Intelligent Network Video: Understanding Modern Video Surveillance Systems</i>
	Schulz, G., (2009). <i>The Green and Virtual Data Center</i>
Snevely, R. (2002). <i>Enterprise Data Center Design and Methodology</i>	



## SAMPLE EXAM QUESTIONS

1. Which one of the following is the MOST important security consideration when selecting a new computer facility?

- (A) Local law enforcement response times
- (B) Adjacent to competitors' facilities
- (C) Aircraft flight paths
- (D) Utility infrastructure

**Answer - D**

2. Which one of the following describes a SYN flood attack?

- (A) Rapid transmission of Internet Relay Chat (IRC) messages
- (B) Creating a high number of half-open connections
- (C) Disabling the Domain Name Service (DNS) server
- (D) Excessive list linking of users and files

**Answer - B**

3. The typical function of Secure Sockets Layer (SSL) in securing Wireless Application Protocol (WAP) is to protect transmissions

- (A) between the WAP gateway and the wireless device.
- (B) between the web server and WAP gateway.
- (C) from the web server to the wireless device.
- (D) between the wireless device and the base station.

**Answer - B**



## GENERAL EXAMINATION INFORMATION

### Paper Based Test (PBT)

**General Information** The doors to all examination rooms will open at 8:00a.m. Examination instructions will begin promptly at 8:30a.m. All examinations will begin at approximately 9:00a.m.

The maximum duration of the CISSP® exam is 6 hours. The maximum duration of all other exams except the CSSLP® is 3 hours. The CSSLP® candidates are allowed a maximum of 4 hours to complete the exam.

Please note there will be no lunch break during the testing period. However, you are permitted to bring a snack with you. You may, at your option, take a break and eat your snack at the back of the examination room. No additional time will be allotted for breaks.

**Examination Admittance** Please arrive at 8:00a.m. when the doors are opened. Please bring your admission letter to the examination site. In order to be admitted, photo identification is also required. You will not be admitted without proper identification. The only acceptable forms of identification are a driver's license, government-issued identification card, or passport. No other written forms of identification will be accepted.

**Examination Security** Failure to follow oral and written instructions will result in your application being voided and application fee being forfeited. Conduct that results in a violation of security or disrupts the administration of the examination could result in the confiscation of your test and your dismissal from the examination. In addition, your examination will be considered void and will not be scored. Examples of misconduct include, but are not limited to, the following: writing on anything other than designated examination materials, writing after time is called, looking at another candidate's examination materials, talking with other candidates at any time during the examination period, failing to turn in all examination materials before leaving the testing room.

You must not discuss or share reference materials or any other examination information with any candidate during the entire examination period. You are particularly cautioned not to do so after you have completed the exam and checked out of the test room, as other candidates in the area might be taking a break and still not have completed the examination. You may not attend the examination only to review or audit test materials. You may not copy any portion of the examination for any reason. No examination materials may leave the test room under any circumstances and all examination materials must be





turned in and accounted for before leaving the testing room. No unauthorized persons will be admitted into the testing area.

Please be further advised that all examination content is strictly confidential. You may only communicate about the test, or questions on the test, using the appropriate comment forms provided by the examination staff at the test site. At no other time, before, during or after the examination, may you communicate orally, electronically or in writing with any person or entity about the content of the examination or individual examination questions.

**Reference Material** Candidates writing on anything other than examination materials distributed by the proctors will be in violation of the security policies above. Reference materials are not allowed in the testing room. Candidates are asked to bring as few personal and other items as possible to the testing area.

Hard copies of language translation dictionaries are permitted for the examination, should you choose to bring one to assist you with language conversions. Electronic dictionaries will not be permitted under any circumstances. The Examination Supervisor will fully inspect your dictionary at check-in. Your dictionary may not contain any writing or extraneous materials of any kind. If the dictionary contains writing or other materials or papers, it will not be permitted in the examination room. Additionally, you are not permitted to write in your dictionary at any time during the examination, and it will be inspected a second time prior to dismissal from the examination. Finally, (ISC)<sup>2</sup> takes no responsibility for the content of such dictionaries or interpretations of the contents by a candidate.

**Examination Protocol** While the site climate is controlled to the extent possible, be prepared for either warm or cool temperatures at the testing center. Cellular phones and beepers are prohibited in the testing area. The use of headphones inside the testing area is prohibited. Electrical outlets will not be available for any reason. Earplugs for sound suppression are allowed. No smoking or use of tobacco products will be allowed inside the testing area. Food and drinks are only allowed in the snack area located at the rear of the examination room. You must vacate the testing area after you have completed the examination. If you require special assistance, you must contact (ISC)<sup>2</sup> Candidate Services (see address at the bottom of this document) at least one week in advance of the examination date and appropriate arrangements will be made. Due to limited parking facilities at some sites, please allow ample time to park and reach the testing area.

**Admission Problems** A problem table for those candidates who did not receive an admission notice or need other assistance will be available 30 minutes prior to the opening of the doors.

### **Examination Format and Scoring**

- The CISSP® examination consists of 250 multiple choice questions with four (4) choices each.



- The CSSLP® examination consists of 175 multiple choice questions with four (4) choices each.
- The SSCP® examination contains 125 multiple choice questions with four (4) choices each.
- The ISSAP®, ISSEP®, and ISSMP® concentration examinations contain 125, 150, 125 multiple choice questions respectively with four (4) choices each.
- The Certified Authorization Professional (CAP®) examination contains 125 multiple choice questions with four (4) choices each. Also, administered in computers.

There may be scenario-based items which may have more than one multiple choice question associated with it. These items will be specifically identified in the test booklet.

Each of these exams contains 25 questions which are included for research purposes only. The research questions are not identified; therefore, answer all questions to the best of your ability. There is no penalty for guessing, so candidates should not leave any item unanswered. Examination results will be based only on the scored questions on the examination. There are several versions of the examination. It is important that each candidate have an equal opportunity to pass the examination, no matter which version is administered. Subject Matter Experts (SMEs) have provided input as to the difficulty level of all questions used in the examinations. That information is used to develop examination forms that have comparable difficulty levels. When there are differences in the examination difficulty, a mathematical procedure called equating is used to make the difficulty level of each test form equal. Because the number of questions required to pass the examination may be different for each version, the scores are converted onto a reporting scale to ensure a common standard. The passing grade required is a scale score of 700 out of a possible 1000 points on the grading scale.

**Examination Results** Examination results will normally be released, via e mail, within 4 to 6 weeks of the examination date. A comprehensive statistical and psychometric analysis of the score data is conducted prior to the release of scores. A minimum number of candidates must have taken the examination for the analysis to be conducted. Accordingly, depending upon the schedule of test dates for a given cycle, there may be occasions when scores are delayed beyond the 4-6 week time frame in order to complete this critical process. If the test is administered via computers, candidates' pass/fail status is provided at the end of the testing on the site. Results WILL NOT be released over the telephone. In order to receive your results, your primary email address must be current and any email address changes must be submitted to (ISC)<sup>2</sup> Customer Support via email [customersupport@isc2.org](mailto:customersupport@isc2.org), or may be updated online in your candidate profile.



**Exam Response Information** Your answer sheet **MUST** be completed with your name and other information as required. The answer sheet must be used to record all answers to the multiple-choice questions. Upon completion, you are to wait for the proctor to collect your examination materials. Answers marked in the test booklet will not be counted or graded, and additional time will not be allowed in order to transfer answers to the answer sheet. All marks on the answer sheet must be made with a No. 2 pencil. You must blacken the appropriate circles completely and completely erase any incorrect marks. Only your responses marked on the answer sheet will be considered. An unanswered question will be scored as incorrect. Dress is “business casual” (neat...but certainly comfortable).

## Any questions?

(ISC)<sup>2</sup> Candidate Services  
33920 US Highway 19 North  
Suite 205  
Palm Harbor, FL 34684  
Phone: 1.866.331.ISC2 (4722) in the United States  
1.727.785.0189 all others  
Fax: 1.727.683.0785



## GENERAL EXAMINATION INFORMATION

### Computer Based Testing (CBT)

#### *Registering for the Exam*

##### **Process for Registration Overview**

This section describes procedures for candidates registering to sit for a Computer Based Test (CBT). The test is administered at Pearson VUE Testing centers in the US, Canada, and other parts of the world.

1. Go to [www.pearsonvue.com/isc2](http://www.pearsonvue.com/isc2) to register for a test appointment.
2. Select the most convenient test center
3. Select an appointment time.
4. Pay for your exam appointment.
5. Receive confirmation from Pearson VUE with the appointment details, test center location and other relevant instructions, if any.

Please note that your registration information will be transferred to (ISC)<sup>2</sup> and all communication about the testing process from (ISC)<sup>2</sup> and Pearson VUE will be sent to you via email.

##### **Fees**

Please visit the (ISC)<sup>2</sup> website <https://www.isc2.org/certification-register-now.aspx> for the most current examination registration fees.

##### **U.S. Government Veteran's Administration G.I. Bill**

The U.S. Department of Veterans Affairs has approved reimbursement to veterans under the G.I. Bill for the cost of the Certified Information System Security Professional (CISSP), the CISSP Concentrations (ISSAP, ISSEP, ISSMP), the Certification and Accreditation Professional (CAP), and the System Security Certified Practitioner (SSCP) examinations. Please refer to the U.S. Department of Veterans Affairs Website at [www.va.gov](http://www.va.gov) for more details.



### **CBT Demonstration**

Candidates can experience a demonstration and tutorial of the CBT experience on our Pearson VUE web page. The tutorial may be found at

[www.pearsonvue.com/isc2](http://www.pearsonvue.com/isc2).

## ***Scheduling a Test Appointment***

### **Process for Registration Overview**

Candidates may register for a testing appointment directly with Pearson VUE ( [www.pearsonvue.com/isc2](http://www.pearsonvue.com/isc2) ). Candidates who do not pass the test will be subject to the retake policy and must wait the applicable time before they are allowed to re-sit for the examination.

### **Exam Appointment**

Test centers may fill up quickly because of high volume and previously scheduled special events. Pearson VUE testing centers also serve candidates from other entities; thus waiting to schedule the testing appointment may significantly limit the options for candidate's desired testing dates at the closest center available.

### **Scheduling for a Testing Appointment**

Candidates may schedule their appointment online at (ISC)<sup>2</sup> CBT Website located at [www.pearsonvue.com/isc2](http://www.pearsonvue.com/isc2). Candidates will be required to create a Pearson VUE account in order to complete registration. Candidates profile will be transferred to (ISC)<sup>2</sup> and becomes part of the candidate's permanent record. Candidates will be able to locate test centers and select from a choice of available examination appointment times at the Pearson VUE website.

Candidates may also register over the telephone with a CBT registration specialist. Please refer to 'Contact Information' for local telephone numbers for your region.



### Rescheduling or Cancellation of a Testing Appointment

If you wish to reschedule or cancel your exam appointment, you must contact Pearson VUE at least **48 hours** before the exam date by contacting **Pearson VUE online** ([www.pearsonvue.com/isc2](http://www.pearsonvue.com/isc2)), OR at least **24 hours** prior to exam appointment time by contacting Pearson VUE **over the phone**. Canceling or rescheduling an exam appointment less than 24 hours via phone notification, or less than 48 hours via online notification is subject to a forfeit of exam fees. Exam fees are also forfeited for no-shows. Please note that Pearson VUE charges a fee of US\$ 20 for reschedules or cancellations.

Reschedules and cancellations may be done at the (ISC)<sup>2</sup> CBT Candidate Website ([www.pearsonvue.com/isc2](http://www.pearsonvue.com/isc2)) or via telephone. Please refer to 'Contact Information' for more information and local telephone numbers for your region.

### Late Arrivals or No Shows

If the candidate does not arrive within 15 minutes of the scheduled exam starting time, he or she has technically forfeited his or her assigned seat.

If the candidate arrives late (after 15 minutes of his/her scheduled appointment), it is up to the discretion of the testing center as to whether or not the candidate may still take the exam. If the test administrator at the testing location is able to accommodate a late arriving candidate, without affecting subsequent candidates' appointments, he/she will let the candidate to sit for the exam and launch his/her exam.

Any/all attempts are made to accommodate candidates who arrive late. However, if the schedule is such that the test center is not able to accommodate a late arrival, the candidate will be turned away and his/her exam fees will be forfeited.

If a candidate fails to appear for a testing appointment, the test result will appear in the system as a No-Show and the candidate's exam fees will be forfeited.

### Procedure for Requesting Special Accommodations

Pearson VUE Professional Centers can accommodate a variety of candidates' needs, as they are fully compliant with the Americans with Disability Act (ADA), and the equivalent requirements in other countries.

Requests for accommodations should be made to (ISC)<sup>2</sup> in advance of the desired testing appointment. Once (ISC)<sup>2</sup> grants the accommodations request, the candidate may schedule the testing appointment using Pearson VUE's special accommodations number. From there, a Pearson VUE coordinator will handle all of the arrangements.



PLEASE NOTE: Candidates that request special accommodations should not schedule their appointment online or call the main CBT registration line.

## What to Bring to the Test Center

### Proper Identification

(ISC)<sup>2</sup> requires two forms of identification, a primary and a secondary, when checking in for a CBT test appointment at a Pearson VUE Test Center. All candidate identification documents must be valid (not expired) and must be an original document (not a photocopy or a fax).

Primary IDs: Must contain a permanently affixed photo of the candidate, along with the candidate's signature.

Secondary IDs: Must have the candidate's signature.

<b>Accepted Primary ID (photograph and signature, not expired)</b>
• Government issued Driver's License or Identification Card
• U.S. Dept of State Drivers License
• U.S. Learner's Permit (card only with photo and signature)
• National/State/Country Identification Card
• Passport
• Passport Cards
• Military ID
• Military ID for spouses and dependents
• Alien Registration Card (Green Card, Permanent Resident Visa)
• Government Issued local language ID (plastic card with photo and signature)
• Employee ID
• School ID
• Credit Card* (A credit card can be used as a primary form of ID only if it contains both a photo and a signature and is not expired. Any credit card can be used as a secondary form of ID, as long as it contains a signature and is not expired. This includes major credit cards, such as VISA, MasterCard, American Express and Discover. It also includes department store and gasoline credit cards.
<b>Accepted Secondary ID (contains signature, not expired)</b>
• U.S. Social Security Card
• Debit/(ATM) Card
• Credit Cards
• Any form of ID on the primary list



## Name Matching Policy

Candidate's first and last name on the presented identification document must exactly match the first and last name on the registration record with Pearson VUE. If the name the candidate has registered with does not match the name on the identification document, proof of legal name change must be brought to the test center on the day of the test. The only acceptable forms of legal documentation are marriage licenses, divorce decrees, or court sanctioned legal name change documents. All documents presented at the test center must be original documents. If a mistake is made with a name during the application process, candidates should contact (ISC)<sup>2</sup> to correct the information well in advance of the actual test date. Name changes cannot be made at the test center or on the day of the exam. Candidates who do not meet the requirements presented in the name matching policy on the day of the test may be subject to forfeiture of testing fees and asked to leave the testing center.

## Non Disclosure

Prior to starting the exam, all candidates are presented with (ISC)<sup>2</sup> non-disclosure agreement (NDA), and are required in the computer to accept the agreement prior to being presented with exam questions. If the NDA is not accepted by the candidate, or refused to accept within the time allotted, the exam will end, and the candidate will be asked to leave the test center. No refund of exam fees will be given. For this reason, all candidates are strongly encouraged to review the non-disclosure agreement prior to scheduling for, or taking the exam.

The agreement is located at [www.pearsonvue.com/isc2/isc2\\_nda.pdf](http://www.pearsonvue.com/isc2/isc2_nda.pdf).

## Day of the Exam

### Check-In Process

Plan to arrive at the Pearson VUE testing center at least 30 minutes before the scheduled testing time. If you arrive more than 15 minutes late to your scheduled appointment, you may lose your examination appointment. For checking-in:

- You will be required to present two acceptable forms of identification.
- You will be asked to provide your signature, submit to a palm vein scan, and have your photograph taken. Hats, scarves and coats may not be worn in the testing room, or while your photograph is being taken.
- You will be required to leave your personal belongings outside the testing room. Secure storage will be provided. Storage space is small, so candidates should plan appropriately. Pearson Professional Centers assume no responsibility for candidates' personal belongings.





- The Test Administrator (TA) will give you a short orientation, and then will escort you to a computer terminal. You must remain in your seat during the examination, except when authorized to leave by test center staff. You may not change your computer terminal unless a TA directs you to do so.

Raise your hand to notify the TA if you

- believe you have a problem with your computer.
- need to change note boards.
- need to take a break.
- need the administrator for any reason.

### Breaks

You will have up to **six hours** to complete the **CISSP**, up to **four hours** to complete the **CSSLP** and up to **three hours** to complete the following examinations:

- **SSCP**
- **CAP**
- **ISSAP**
- **ISSEP**
- **ISSMP**

Total examination time includes any unscheduled breaks you may take. All breaks count against your testing time. You must leave the testing room during your break, but you may not leave the building or access any personal belongings unless absolutely necessary (e.g. for retrieving medication). Additionally, when you take a break, you will be required to submit to a palm vein scan before and after your break.

### Technical Issues

On rare occasions, technical problems may require rescheduling of a candidate's examination. If circumstances arise causing you to wait more than 30 minutes after your scheduled appointment time, or a restart delay lasts longer than 30 minutes, you will be given the choice of continuing to wait, or rescheduling your appointment without an additional fee.

- If you choose to wait, but later change your mind at any time prior to beginning or restarting the examination, you will be allowed to take exam at a later date, at no additional cost.
- If you choose not to reschedule, but rather test after a delay, you will have no further recourse, and your test results will be considered valid.
- If you choose to reschedule your appointment, or the problem causing the delay cannot be resolved, you will be allowed to test at a later date at no additional charge. Every attempt will be made to contact candidates if technical problems are identified prior to a scheduled appointment.



## Testing Environment

Pearson Professional Centers administer many types of examinations including some that require written responses (essay-type). Pearson Professional Centers have no control over typing noises made by candidates sitting next to you while writing their examination. Typing noise is considered a normal part of the computerized testing environment, just as the noise of turning pages is a normal part of the paper-and pencil testing environment. Earplugs are available upon request.

## When the Exam is Finished

After you have finished the examination, raise your hand to summon the TA. The TA will collect and inventory all note boards. The TA will dismiss you when all requirements are fulfilled.

If you believe there was an irregularity in the administration of your test, or the associated test conditions adversely affected the outcome of your examination, you should notify the TA before you leave the test center.

## Results Reporting

Candidates will receive their unofficial test result at the test center. The results will be handed out by the Test Administrator during the checkout process. (ISC)<sup>2</sup> will then follow up with an official result via email.

In some instances, real time results may not be available. A comprehensive statistical and psychometric analysis of the score data is conducted during every testing cycle before scores are released. A minimum number of candidates are required to take the exam before this analysis can be completed. Depending upon the volume of test takers for a given cycle, there may be occasions when scores are delayed for approximately 4-6 weeks in order to complete this critical process. Results WILL NOT be released over the phone. They will be sent via email from (ISC)<sup>2</sup> as soon as the scores are finalized. If you have any questions regarding this policy, you should contact (ISC)<sup>2</sup> prior to your examination.

## Retake Policy

Test takers who do not pass the exam the first time will be able to retest after 30 days. Test takers that fail a second time will need to wait 90 days prior to sitting for the exam again. In the unfortunate event that a candidate fails a third time, the next available time to sit for the exam will be 180 days after the most recent exam attempt. The retake wait time then resets after the fourth attempt starting again with a 30-day waiting period.



### Recertification by Examination

Candidates and members may recertify by examination for the following reasons ONLY;

- The candidate has become decertified due to reaching the expiration of the time limit for endorsement.
- The member has become decertified for not meeting the number of required continuing professional education credits.

### Logo Usage Guidelines

(ISC)<sup>2</sup> is a non-profit membership organization identified as the leader in certifying individuals in information security.

Candidates who successfully complete any of the (ISC)<sup>2</sup> certification requirements may use the appropriate Certification Mark or the Collective Mark, where appropriate, and the logo containing the Certification Mark or the Collective Mark, where appropriate (the "Logo") to identify themselves as having demonstrated the professional experience and requisite knowledge in the realm of information system security. Please visit the following link (URL) for more information on logo use:

[https://www.isc2.org/uploadedfiles/\(ISC\)2\\_Public\\_Content/Legal\\_and\\_Policies/LogoGuidelines.pdf](https://www.isc2.org/uploadedfiles/(ISC)2_Public_Content/Legal_and_Policies/LogoGuidelines.pdf)

### Any questions?

(ISC)<sup>2</sup> Candidate Services  
33920 US Highway 19 North  
Suite 205  
Palm Harbor, FL 34684  
Phone: 1.866.331.ISC2 (4722) in the United States  
1.727.785.0189 all others  
Fax: 1.727.683.0785