

4016 Points

* = Can include a summary justification for that section.

FUNCTION 1 - INFORMATION SYSTEM LIFE CYCLE ACTIVITIES

Life Cycle Duties

No Subsection

2. System Disposition/Reutilization

*E - Discuss processes for disposition of media and data

E - Identify agency-specific system reutilization policies and procedures

3. System Configuration and Management Board (SCMB)

*E - Identify life cycle management SCMB policies and procedures

4. Operations & Maintenance (O & M)

*E - Discuss risk analysis processes used in development of life cycle functions

E - Monitor life cycle operation and maintenance project milestones relating to risk

E - Monitor maintenance procedures concerning life cycle operations and analysis issues

E - Monitor performance measurement data in operations and maintenance examination of events and/or changes in an event

5. System Acquisition

*E - Discuss risk analyst concerns relating to life cycle system security planning

E - Monitor process of selecting and purchasing IT designed to implement management risk process

E - Verify that system acquisitions policies and procedures include assessment of risk management policies

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		X		X	X	
		X			X	
		X				
		X				
		X				
		X				
		X				
		X			X	
					X	
		X				X

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6. System Administration							
*E - Discuss audit mechanism processes used to collect, review, and/or examine system activities						X	
7. System Owners							
*E - Discuss maintenance plans for protective measures to ensure tolerable level of risk			X				
8. System Developers							
*E - Discuss process for selecting and purchasing new information technology (IT)			X			X	
E - Discuss process to ensure that applications function according to specifications			X			X	
E - Explain risk methodologies used to evaluate measures taken to protect system			X			X	
9. Computer Science and Architecture							
*E - Discuss system IA design guidance			X				
10. Security Product Integration							
E - Examine and analyze applied security						X	
11. Information Systems Security Officer (ISSO) Activities							
*E - Discuss maintenance of user accounts			X			X	
E - Discuss processes for timely deletion of accounts			X			X	
E - Discuss processes for updating access			X			X	
E - Discuss processes for verification of authorization prior to adding new account			X			X	
12. Audit Mechanism							
*E - Review policy, guidance and process for the capture, maintenance, and distribution of audit logs						X	
13. Policy Development							
E - Develop risk management methodology which includes evaluation of threats, vulnerabilities, and countermeasures			X			X	

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14. System Certifiers and Accreditors							
*E - Explain how certification process ensures security requirement implementation			X			X	
E - Explain local policies and procedures to supplement and implement higher-level guidance			X				
15. Automated Tool for Security Test							
E - Discuss utilities used to determine vulnerabilities or configurations not			X			X	
FUNCTION 2 - COUNTERMEASURES IDENTIFICATION,							
Countermeasures							
No Subsection							
1. General							
*E - Identify all component and overall risks inherent in system						X	
E - Assist certifier to determine countermeasures based on threat capabilities and motivations						X	
2. Analyzing Potential Countermeasures							
*E - Discuss security test and evaluation (ST&E) procedures, tools, and equipment						X	
E - Assist certifier to evaluate security requirements as potential countermeasures						X	
E - Discuss respective value of penetration testing post-testing actions, general information principles, and summary comparison of network testing techniques						X	
E - Discuss testing roles and responsibilities						X	
E - Explain process to determine underlying state of system						X	
E - Relate organization IT security needs to countermeasure requirements						X	
3. Determining Countermeasures							
E - Apprise decision makers of existing countermeasure models, tools, and techniques							X

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4. Identifying Potential Countermeasures							
*E - Discuss effectiveness of automated security tools that confirm validity of a transmission						X	
E - Assist certifier/IA engineer to evaluate system security safeguards established to determine system security posture						X	
E - Discuss effectiveness of automated security tools that verify an individual?s eligibility to receive specific categories of information						X	
E - Discuss methodologies used to evaluate system security safeguards						X	
5. Determining Cost/Benefit of Countermeasures							
*E - Outline cost/benefit of organization?s IA countermeasure plans						X	
E - Outline cost/benefit of personnel supporting access control policies			X			X	
FUNCTION 3 - CERTIFICATION AND ACCREDITATION							
Certification and Accreditation							
No Subsection							
1. Certification and Accreditation Guidelines and Documentation							
*E - Explain applicable organizational certification and accreditation processes			X				
E - Discuss role of RA in certification and accreditation process			X				
2. Vulnerabilities and Attacks							
*E - Discuss paired interaction of a vulnerability to an attack			X			X	
4. Security Laws							
E - Outline security laws applicable to certification/accreditation process			X				
5. Physical Security Requirements							
E - Discuss risk mitigation decisions derived from analysis and review of			X				
6. Security Inspections							

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*E - Evaluate security inspections conducted during C&A process			X				
E - Discuss security inspections conducted during C&A process			X				
7. Security Policies and Procedures							
E - Explain security policies and procedures implemented during risk analysis/assessment process			X			X	
8. Security Processing Mode							
E - Discuss vulnerabilities associated with security processing modes						X	
9. System Certification							
*E - Discuss threat and vulnerability analyses input to C&A process			X				
10. Support C&A							
*E - Identify system security policies			X			X	
E - Explain alternative actions permitted on system						X	
11. System Security Profile							
*E - Describe protections offered by security features in specific configurations						X	
E - Assist in helping to identify protections offered by security features in specific configurations						X	
E - Discuss security features of system						X	
12. Threat/Risk Assessment							
*E - Identify threat/risk assessment methodology appropriate for use with system undergoing accreditation			X			X	
13. Information Technology Security Evaluation Criteria							
E - Assist in the use of common criteria guidance to determine hardware and software assurance applications for simultaneous processing of a range of information classes						X	
14. Mission							
E - Discuss impact of security on mission						X	
15. Interviewing/Interrogation							
E - Assist certifier in preparing questions for determining countermeasures during C&A process						X	

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16. Applications Security E - Discuss criticality of applications security			X			X	
FUNCTION 4 - SYNTHESIS OF ANALYSIS							
Synthesis of Analysis Duties							
A. General							
1. Synthesis of Components and Overall Risks E - Report synthesis of all component and risks inherent in a system			X			X	
3. Aspects of Security E - Discuss security with regard to confidentiality, integrity, authentication, availability, and non-repudiation			X			X	
4. Assessment Methodology E - Appraise information acquisition and review process for best use of resources to protect system						X	
5. Associate Threat Probabilities to Vulnerability E - Describe process of analyzing paired interactions of system threats and vulnerabilities			X			X	
6. Conducting Risk Analysis E - Conduct risk analysis examination and evaluation process to determine relationships among threats, vulnerabilities, and countermeasures			X			X	
7. Countermeasure Analysis *E - Conduct detailed examination and evaluation of impact of attacks E - Conduct detailed examination and evaluation of possible actions to mitigate vulnerabilities						X	
8. Critical Thinking E - Discriminate between known and hypothetical variables based on executed test procedures						X	
9. Deductive Reasoning *E - Analyze tests results						X	

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	CIS 525/425: Principles of Cryptography
10. Detailed Residual Risk	
*E - Discuss susceptibility of a system to attack after countermeasures have	X
E - Assist certifier/IA engineer in evaluating susceptibility of a system to attack after countermeasures have been applied	X
13. All Risk Variables	
E - Evaluate an analysis of threats, vulnerabilities, attacks, and consequences in relationship to risk assessment of a system	X
14. Risk Assessment (Environment & Threat Description)	
E - Discuss environment in relation to current threat	X
15. Risk Management Methodology	
E - Discuss organizational capability and ability to evaluate threats, and vulnerabilities	X
16. Security Countermeasures	
E - Assist certifier/IA engineer in defining countermeasures directed at specific threats and vulnerabilities	X
17. Technical Vulnerability	
E - Discuss hardware, firmware, communications, or software weaknesses that open an information system to exploitation	X
18. Threat Analysis	
E - Examine methods through which threat agent adversely affects information system, facility, or operation	X
19. Threat Description	
E - Define means through which a threat agent can adversely affect information system, facility, or operation	X
20. Threat/Risk Assessment	
E - Discuss process of formally evaluating degree of threat and describing nature of threat	X
21. Mission	
*E - Discuss information system support mission	X

22. Vulnerabilities

*E - Assist in identifying weakness in an information system, system security procedures, internal controls, or implementation that could be exploited

E - Discuss weakness in an information system, system security procedures, internal controls, or implementation that could be exploited

E - Explain hardware or software flow that opens an information system to potential exploitation

23. Vulnerability Analysis

*E - Analyze an information system to determine adequacy of security measures

B. Documentation

1. Policies

*E - Explain applicable national level policies

E - Discuss agency/local guidance

9. Technical Knowledge of Information System

E - Outline technical knowledge required of personnel responsible for networks, servers, workstations, operating systems, etc.

C. Effect of Countermeasure

9. Security Product Testing/Evaluation

E - Examine analysis of security safeguards of a system as they have been applied to an operational environment to determine security posture

10. Technical Knowledge of Information System

E - Outline technical knowledge required of personnel responsible for operating and maintaining networks, servers, workstations, operating systems, etc.

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*E - Assist in identifying weakness in an information system, system security procedures, internal controls, or implementation that could be exploited					X	
E - Discuss weakness in an information system, system security procedures, internal controls, or implementation that could be exploited					X	
E - Explain hardware or software flow that opens an information system to potential exploitation					X	
*E - Analyze an information system to determine adequacy of security measures					X	
B. Documentation						
1. Policies						
*E - Explain applicable national level policies		X		X		
E - Discuss agency/local guidance		X				
9. Technical Knowledge of Information System						
E - Outline technical knowledge required of personnel responsible for networks, servers, workstations, operating systems, etc.		X			X	
C. Effect of Countermeasure						
9. Security Product Testing/Evaluation						
E - Examine analysis of security safeguards of a system as they have been applied to an operational environment to determine security posture					X	
10. Technical Knowledge of Information System						
E - Outline technical knowledge required of personnel responsible for operating and maintaining networks, servers, workstations, operating systems, etc.		X			X	

FUNCTION 5 - TESTING AND EVALUATION

Testing and Evaluation Duties

No Subsection

3. Account Administration

E - Discuss maintenance of accounting files, tools, user accounts, and system statistics

4. Assessment Methodology

E - Define vulnerability analysis process

5. Associate Threat Probabilities to Vulnerability

E - Explain paired interaction of system threats and vulnerabilities

6. Audit Trails and Logging

E - Team with certifier/IA engineer to compile chronological record of system activities for reconstruction and examination of events and/or changes in an event

7. Backups

E - Discuss purpose of using copies of backup files for later reconstruction of files

8. Software Test & Evaluation Results

E - Ensure software test and evaluation results related to system restoration are performed

12. Security Test & Evaluation Plan & Procedure

E - Assist with the development of ST&E plan and procedure for testing and evaluating a system

13. Error Logs

E - Interpret files created by operating system for review of audit process

14. Non-Technical & Technical Result

E - Interpret technical and non-technical results from testing and evaluation

15. Evaluation Techniques

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		X			X	
					X	
		X			X	
			X			X
		X		X		
				X	X	
						X
			X			X
						X

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E - Team with certifier/IA engineer to integrate technical analysis of components, products, subsystems, or systems security that establishes whether or not component, product subsystem, or system meets a specific set of requirements independently and in						X	
16. Identify All Risk Variables							
E - Explain development of a compendium of relative threats, vulnerabilities, attacks, and consequences related to a system (Common vulnerabilities and exploitations)						X	
18. Certification Tools							
E - Team with certifier/IA engineer to interpret results of certification tools during testing and evaluation						X	
19. Privileges (Class, Nodes)							
E - Influence program or user operations that can be performed during testing and Evaluation						X	
20. Test and Evaluation Strategies							
*E- Identify strengths of alternative test and evaluation strategies						X	
21. Testing Implementation of Security Features							
E - Integrate testing of security features during testing and evaluation						X	
FUNCTION 6 - THREAT AND ADVERSARY ANALYSIS							
Threat and Adversary Analysis Duties							
A. General							
1. Conducting Risk Analysis							
E - Conduct examination of vulnerabilities, attack, threats and consequences that may affect system						X	
2. Cost/Benefit Analysis							
E - Conduct an assessment of costs of data protection for a system versus cost of loss or compromise			X			X	
3. Critical Thinking							

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E - Discuss known and hypothetical variables based on test procedures						X	
4. Deductive Reasoning							
E - Recommend solutions based on a set of static and variable factors of system						X	
5. Effects of Mitigation							
E - Determine effects of mitigation derived from application of countermeasures to a system						X	
6. Hostile Intelligence Sources							
E - Discuss impact of hostile agents seeking national security information which could potentially cause harm to national security			X				
7. All Risk Variables							
E - Build a compendium of relative threats, vulnerabilities, attacks, and consequences related to system						X	
B. Risk Assessment (Environment & Threat Description)							
1. Risk Management Methodology							
E - Discuss evaluation of threats, vulnerabilities, and countermeasures to determine residual risk						X	
2. Security Countermeasures							
E - Discuss security and software countermeasures during design, implementation, and testing phases to achieve required level of confidence			X			X	
3. Threat Analysis							
E - Conduct examination and evaluation of sources and factors that can adversely impact system						X	
4. Treat Description							
E - Identify level of threat based on its applicability to system						X	
5. Threat/Risk Assessment							

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E - Recommend life cycle countermeasures based on assessments of threats, capabilities, and motivations to exploit vulnerability						X	
6. Mission							
*E - Discuss current mission and role of information system in supporting mission						X	
E - Determine if an adverse system finding should be allowed to halt mission support operations						X	
7. Vulnerability Analysis							
E - Appraise weaknesses in information system, security procedures, internal controls, or implementations that could be exploited						X	
C. Analysis for Decisions							
1. Agency-Specific Policies and Procedures							
E - Discuss local policies and procedures implementing regulations, laws, and procedures in local environment			X				
H. Technical Surveillance Countermeasures							
1. Technical Surveillance Countermeasures							
E - Discuss Techniques and measures to detect and neutralize a wide variety of hostile penetration technologies			X	X			
FUNCTION 7 - MISSION AND ASSETS ASSESSMENTS							
Mission and Assets Duties							
A. General							
1. Conducting Risk Analysis							
*E - Conduct detailed evaluation of vulnerabilities, attack, threats, and consequences that may affect system						X	
E - Conduct detailed examination of vulnerabilities, attack, threats, and consequences that may affect system						X	
2. Cost/Benefit Analysis							
E - Conduct cost assessment for providing data protection versus cost of data loss or compromise						X	

3. Critical Thinking

E - Understand known and hypothetical variables based on test procedures

4. Deductive Reasoning

E - Recommend solutions based on a set of static and variable factors

5. Effects of Mitigation

E - Determine effects of mitigation derived from application of countermeasures

6. Hostile Intelligence Sources

E - Discuss impact of hostile agents seeking national security information which could potentially cause harm to national security

7. All Risk Variables

E - Build a compendium of relative threats, vulnerabilities, attacks, and consequences related to system

B. Risk Assessment (Environment & Threat Description)

1. Risk Management Methodology

E - Discuss evaluation of threats, vulnerabilities, and countermeasures to determine residual risk

2. Security Countermeasures

E - Discuss security and software countermeasures during design, implementation and testing phases to achieve required level of confidence

3. Threat Analysis

*E - Conduct detailed examination and evaluation of sources and factors that can adversely impact system

4. Treat Description

E - Identify level of threat based on its applicability to system

5. Threat/Risk Assessment

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E - Understand known and hypothetical variables based on test procedures					X	
E - Recommend solutions based on a set of static and variable factors					X	
E - Determine effects of mitigation derived from application of countermeasures					X	
E - Discuss impact of hostile agents seeking national security information which could potentially cause harm to national security		X				
E - Build a compendium of relative threats, vulnerabilities, attacks, and consequences related to system					X	
E - Discuss evaluation of threats, vulnerabilities, and countermeasures to determine residual risk		X			X	
E - Discuss security and software countermeasures during design, implementation and testing phases to achieve required level of confidence		X			X	
E - Conduct detailed examination and evaluation of sources and factors that can adversely impact system					X	
E - Identify level of threat based on its applicability to system					X	

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E - Recommend life cycle countermeasures based on assessment of threats, capabilities, and motivations to exploit vulnerability						X	
6. Mission							
E - Assess mission to determine if an adverse finding should be allowed to affect continued IT operations in a given mission environment						X	
7. Vulnerability Analysis							
E - Appraise exploitable weaknesses in information system, security procedures, internal controls or implementations						X	
D. Agency-Specific Policies and Procedures							
1. Agency-Specific Policies and Procedures							
E - Discuss local policies and procedures implementing regulations, laws, and procedures in local environment			X				
H. Technical Surveillance Countermeasures							
1. Technical Surveillance Countermeasures							
E - Discuss techniques and measures to detect and neutralize hostile penetration technologies			X	X			
FUNCTION 8 - VULNERABILITIES AND ATTACK AVENUES ANALYSIS							
Vulnerability and Attack Avenues Duties							
A. General							
1. Vulnerabilities, attacks, threats, and consequences							
E - Assess vulnerabilities, attacks, threats, and consequences to determine vulnerabilities and attack avenues						X	
2. Cost/Benefit Analysis							
E - Discuss cost analysis of data protection versus cost of data lose or compromise						X	
3. Critical Thinking							
E - Apply discrimination to known and potential vulnerabilities based on test procedures						X	

4. Deductive Reasoning

E - Use test results to determine underlying state of system

5. Effect of Countermeasures on Risk

E - Determine effect of countermeasures on risk through the analysis of paired interaction of a defense

6. Effects of Mitigation

E - Determine effects of mitigation derived from application of countermeasures to system

7. Hostile Intelligence Sources

E - Discuss hostile intelligence sources as part of vulnerabilities and attack venues

8. Risk Variables

E - Identify risk variables to build a compendium of relative threats, vulnerabilities, attacks, and consequences related to a system

9. Jamming

E - Discuss jamming as a potential threat

10. Risk Assessment

E - Define risk assessment methodology in relation to risk analyst function

11. Risk Management Methodology

E - Define risk management methodology in relation to system security

12. Security Countermeasures

E - Discuss security countermeasures in relation to vulnerabilities and attack venues

13. Threat Analysis

E - Use threat analysis to determine vulnerabilities and attack venues

14. Threat/Risk Assessment

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					X	
					X	
					X	
		X				
					X	
	X					
		X				
			X			
					X	
					X	

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E - Apply threat and/or risk assessment in determining vulnerabilities and attack venues						X	
15. Mission							
E - Support organizational mission in conjunction with vulnerabilities and attack venues						X	
16. Vulnerabilities							
E - Discuss weaknesses in system, system security procedures, and internal controls and implementation						X	
17. Vulnerability Analysis							
E - Use vulnerability analysis to determine adequacy of security measures, identify security deficiencies, and provide data to predict effectiveness of security measures						X	
B. Developing Attack Avenues							
1. Avenues of Attack							
E - Describe known avenues of attack such as operating system bugs, network vulnerabilities, human threats, etc.						X	
C. Characterizing Vulnerabilities							
1. Characterizing Vulnerabilities							
*E - Discuss aspects of security in a vulnerability testing and evaluation plan						X	
E -Evaluate threats and vulnerabilities						X	
D. Researching Vulnerability Report							
1. Researching Vulnerability Report							
E -Evaluate vulnerability assessment methodologies						X	
E. Collecting and Reviewing Vulnerabilities							
1. Collecting and Reviewing Vulnerabilities							
*E - List potential vulnerabilities that may lead to defeat of security services						X	
F. Comparing and Contrasting Attack Avenues							

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1. Comparing and Contrasting Attack Avenues							
*E - Discuss techniques and measures to detect or neutralize a wide variety of hostile penetration technologies			X	X			
E - Evaluate payoff to and liabilities incurred by an attacker in a successful attack			X			X	
G. Risk of Detection and Response							
1. Risk of Detection and Response							
E - Characterize impact of security breaches and estimate an attacker's probable Response						X	
I. Technology Necessary to Mount Attack							
1. Technology Necessary to Mount Attack							
E - Describe technology needed to mount an attack based on existing countermeasures			X				
FUNCTION 9 - TRAINING AND AWARENESS							
Training and Awareness Duties							
A. Policies/Procedures/Methodology							
1. Access Control Policies							
*E - Summarize national and local level access control policies			X				
2. Laws, Regulations, and Other Public Policy							
*E - Identify local application of IA laws, regulations, and policies			X	X			
E - Discuss applicable IA laws, regulations, and policies			X	X			
3. Agency-Specific IA and IT Policies and Procedures							
*E - Summarize agency-specific policies and procedures in relation to risk environment						X	
5. Audit Trails and Logging Policies							
*E - Discuss audit trails and logging policies			X			X	
6. Change Control Policies							
*E - Discuss change control policies for incorporation in IA training			X				
7. Communications Security Policy and Guidance							

	Courses
*E - Discuss communications security policy and guidance for incorporation into IT training	X
E - Identify communications security policy and guidance for incorporation into IT training	X
8. Emergency Destruction Planning and Procedures (EDPP)	
*E - Discuss EDPP for incorporation in IA training	X
9. Personnel Security Policies and Guidance	
E - Discuss role of personnel security policies and guidance as part of overall risk management plan	X
10. Formal Methods for Security Design	
E - Outline role of formal methods in security design as part of risk management plan	X
11. Information Categorization	
E - Discuss various categorization schemas	X
12. Information Classification	
*E - Discuss classification policies as part of risk management plan	X
14. Methods of Defining Security Requirements	
*E - Discuss definitions of security requirements	X
15. Physical Security Requirements	
*E - Discuss physical security requirements	X
17. Risk Management Methodology	
E - Summarize approaches to risk management	X
B. Technology	
1. Applications Security	
E - Discuss state of security features embedded in commercial-off-the-shelf (COTS) products in relation to risk management plan	X
2. Database Security Features	
*E - Discuss elements of database security features	X
E - Identify critical database security pitfalls	X

Courses

CIS 444: Computer Networking

CIS 521/421: Introduction to Information Assurance

CIS 522/422: Computer Forensics and Incident Response

CIS 523/423: Disaster Recovery and Business Continuity

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CIS 525/425: Principles of Cryptography

E - List database best practices and pitfalls in database security

3. Distributed Systems Security

E - Discuss risks associated with distributed systems security

4. Firmware Security

E - Discuss differences between security features and capabilities

7. Network Security Software

E - Discuss state and vulnerabilities in network security software

9. Technology Trends

E - Summarize technology trends in context of future security management plan

10. Environmental/Natural Threats

*E - List environmental and natural threats as part of security management plan

E - Discuss environmental and natural threats as part of security management plan

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E - List database best practices and pitfalls in database security		X				
3. Distributed Systems Security						
E - Discuss risks associated with distributed systems security		X				
4. Firmware Security						
E - Discuss differences between security features and capabilities		X				
7. Network Security Software						
E - Discuss state and vulnerabilities in network security software		X				
9. Technology Trends						
E - Summarize technology trends in context of future security management plan						X
10. Environmental/Natural Threats						
*E - List environmental and natural threats as part of security management plan				X		
E - Discuss environmental and natural threats as part of security management plan				X		