King Saud University
College of Computer and Information Science
IT Department
Course : Information Security CAP 430
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Sample Exam Model Answers

Multiple Choice Answers :

1	2	3	4	5	6	7	8	9	10	11	12	13
B	C	A	C	D	B	D	B	B	A	A	D	C

14	15	16	17	18	19	20	21	22	23	24	25	26
C	A	D	C	A	A	C	A	B	A	D	A	C

27	28	29	30	31	32	33	34	35	36	37	38	39
B	D	C	C	B	B	D	B	B	D	C	B	A

40	41	42	43	44	45	46	47	48	49	50	51
D	C	C	A	D	A	A	A	B	A	B	B

QUESTION # 1

1. The primary goal of information security is to protect _____.

A - People	C - Procedures
B - Information	D - Computers

2. Each of the following factors illustrates why information security is increasingly difficult, except____

A - Distributed attacks	C - Faster computer processors
B - Faster detection of weaknesses	D - Growing sophistication of attacks

3. A federal act that broadens the surveillance of law enforcement agencies to enhance the detection of terrorism is the _____

A - USA Patriot Act	C - HIPAA
B - Sarbanes-Oaxley Act	D - Gramm-Leach-Bliley Act

4. _____ ensures that information is correct and that no unauthorized person has altered the data.

A - Authentication	C - Integrity
B - Non-repudiation	D - Confidentiality

5. While most attacks today take advantage of vulnerabilities that someone has already uncovered, _____ occurs when a hacker discovers and exploits a previously unknown flaw

A - Back- door attack	C - Ground zero attack
B - Vulnerability attack	D - Day zero attack

6. _____ is the most significant cause of financial loss due to a security breach .

A - Expert brain drain	C - Virus attacks
B - Data theft	D - Equipment theft

7. There are ____ available port numbers , while ____ are called available port numbers.

A - 65,535 , 512	C - 32, 765 , 1024
B - 16K , 1K	D - 65,535 , 1024

8. The port number for the HTTP protocol is ____.

A - 21	C - 23
B - 80	D - 25

9. To determine the established connections and the ports on which your computer is listening for new connections , you can type ____ in DOS

A - netstat - a	C - netstat - p
B - netstat - ano	D - view-ports

10. Of the following types of security, which would be primarily concerned with someone stealing the server from the premises?

A - Physical security	C - Management and policy
B - Operational security	D - Authentication

11. Which of the following authentication methods uses more than one authentication process for log on?

A - Multi-factor	C - Smart Card
B - Biometrics	D - Kerberos

12. Which of the following protocols allows an organization to present a single IP address to the Internet while utilizing private IP addressing across the LAN?

A - VLAN	C - DMZ
B - VPN	D - NAT

13. Of the following services, which one would be most likely to utilize a retinal scan?

A - Auditing	C - Authentication
B - Access control	D - Data Confidentiality

14. A computer virus is considered a _____ to a computer system..

A - Vulnerability	C - Threat agent
B - Threat	D - risk

15. Of the top five jobs in the computer field are the following except_____

A - Software maintenance	C - Security analyst
B - Web developers	D - Database administrator

16. _____ is the prevention of unauthorized withholding of information or resources

A - Integrity	C - Access control
B - Confidentiality	D - Availability

17. DoS attacks are attacks on the ____ of a system

A - Integrity	C - Availability
B - Confidentiality	D - Services

18. Main goals of security are the following except ____

A - Assertion	C - Reaction
B - Prevention	D - Detection

19. Firewalls are part of ____ security , for the sake of _____

A - Host , prevention	C - Network , detection
B - Host , detection	D - Network , prevention

20. _____ involves using someones's SSN to establish a bank account

A - Data theft	C - Card theft
B - Bank theft	D - Identity theft

21. _____ threats involve the acceptance of false data, include all of the following except___

A - Denial of service	C - Spoofing
B - Modification	D - Repudiation of origin

22. ___ is a skilled person who violates system security with malicious intent

A - Hacker	C - Script Kiddie
B - cracker	D - Employee

23. The goals of cyberattacks are all of the following except ____

A - Delay service to users	C - Deny service to legitimate users
B - Deface electronic information	D - Commit unauthorized intrusions

24. ____is a type of access attack

A - Shoulder surfing	C - Snooping
B - Dumpster diving	D - All of the above

25. Information gleaned from network management protocols that collect diagnostics about the network is

A - Can be sensitive	C - Is public information
B - Is not a security risk	D - Is unusable

26. ____ is one type of programming flaw exploited by hackers

A - Back door	C - Buffer overflow
B - Buffer resizing	D - Any of the above

27. To convince the switch to send traffic to the sniffer, the sniffer duplicates the ___ address of the taeget

A - Port	C - IP
B - MAC	D - Socket

28. _____ is the easiest and cheapest way to attack a computer system

A - Virus	C - Interception
B - Spoofing	D - Social engineering

29. _ involves sending people electronic requests for information that appears to come from a valid source

A - Masquerading	C - Phishing
B - Dumpster diving	D - Spoofing

30. To minimize password-guessing attacks , we should avoid ___

A - PWs should expire at least every 30 days	C - One secure PW should be used on all systems
B - PWs should have at least 8 characters	D - PWs cannot be reused for 12 months

31. The birthday paradox states that the probability that you share the same birthday with one of the people in a room jumps to 99% if the room contains ____ people.

A - 25	C - 99
B - 60	D - 999

32. When program files change size from the installed version , that signals a ___ attack

A - Worm	C - Trojan horse
B - Virus	D - Back door

33. A ___ virus will try to hide from antivirus programs by changing form

A - Armored virus	C - Stealth
B - Retrovirus	D - Polymorphic

34. A ____ virus exploits the default searchpath in DOS

A - Stealth	C - Retrovirus
B - Companion	D - Polymorphic

35. The most current list of viruses is at the ___ website

A - CERT	C - Semantec
B - NIST	D - All of the above

36. Matilda was unhappy with her boss, so she planted a ___ in the system , to be active if she is fired

A - Worm	C - Trojan horse
B - Virus	D - Logic bomb

37. Data should be protected with ___ layers of security

A - Thick	C - Diverse
B - Strong	D - Multiple

38. A security plan that is initiated by a(n)___ would br defined as a bottom-up approach.

A - CIO	C - Chief security officer
B - Help-desk technician	D - Security director

39. Kerberos is an authentication system that is based on issuing___

A - Tickets	C - Receipts
B - Certificates	D - Session keys

40. What is the process of determining who owns a particular database called?

A - Auditing	C - Threat analysis
B - Access control	D - Accountability

41. A server in your network has a program running on it that bypasses authorization. Which type of attack is that?

A - DoS	C - Back-Door
B - DDoS	D - Social engineering

42. You have discovered that an expired certificate is being used repeatedly to gain logon privileges. Which type of attack is this most likely to be?

A - Man-in-the middle	C - Replay
B - Back door	D - TCP/IP hijacking

43. Your system has just stopped responding to keyboard commands. You noticed that this occurred when a spreadsheet was open and you dialed in to the Internet. Which kind of attack has probably occurred?

A - Logic bomb	C - Virus
B - Worm	D - Ack attack

44. The Smurf attacks uses the ___ protocol to conduct its attack.

A - TCP	C - UDP
B - IP	D - ICMP

45. You are working late one night, and you notice that the hard drive on your computer is very active even though you are not doing anything and you are not connected to the Internet. What is most likely happening?

A - A disk failure is imminent	C - Your system is under DoS attack
B - A virus is spreading	D - TCP/IP hijacking is being attempted

46. MAC stands for ___

A - Message authentication code	C - media access control
B - Message acceptance code	D - None of the above

47. The data added to a section of text when using MD algorithm is called___

A - Padding	C - Extender
B - Filler	D - Byte code

48. Cryptography provides all the following except____

A - Confidentiality	C - Integrity
B - Speed	D - Authentication

49. The ___ defines the overall process involved with developing a security policy.

A - F security policy cycle	C - monitoring scope
B - risk identification cycle	D - evaluation cycle

50. ____ are 64-bit block ciphers except ___

A - DES	C - IDEA
B - AES	D - Blowfish

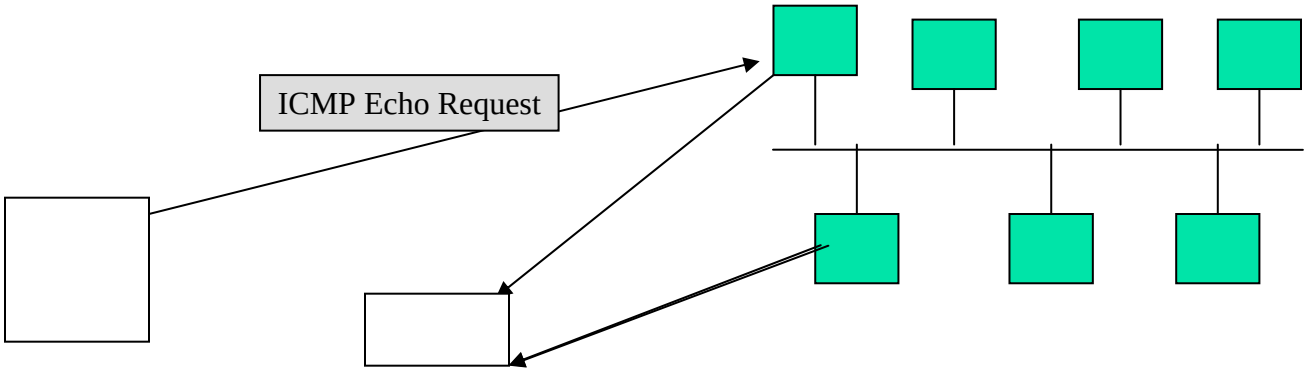
51. ___ is defined as the obligations that are imposed on owners and operators of assets to exercise reasonable care of the assets and take necessary precautions to protect them.

A - Proper care	C - Secure care
B - Due care	D - Maximum care

QUESTION #2

a) Explain how a Smurf attack is carried out.

Smurf Attack : This can be as simple as a hacker sending a ping packet to the broadcast address of a large network while spoofing the source address to direct all the responses at a target.



Hacker System **Target System**

QUESTION #3

a) How can you prevent a guessing attack on a password ?

Guessing attacks can be prevented if people use long passwords with no relation with their names, dates of birth, account numbers, and so on.

b) What are the disadvantages of using a timestamp in Timestamp Challenge?

One problem with timestamp is the difficulty in synchronization. The computer of the claimant and the verifier needs to be synchronized for the timestamp to be effective.

QUESTION #4

a) Explain the key generation and encryption/decryption steps of the RSA encryption algorithm. Discuss the security of RSA.

(See pages 303 and 306 in Forouzan)

b) The encryption key in a transposition cipher is (3, 2, 6, 1, 5, 4). Find the decryption key

Encryption key

3 2 6 1 5 4 **3 2 6 1 5 4 Key**

1 2 3 4 5 6 Index

Decryption key

4 2 1 6 5 3 **4 2 1 6 5 3 Key**

1 2 3 4 5 6 Index

c) Use the Rail Fence Cipher with key 2 to encode "**A man a plan a canal**"

SOLUTION :

Ciphertext : __aaalncnlmnpaaaa__

QUESTION #5

Fill in the blanks :

1. Data that has been encrypted by an encryption algorithm (a cipher) is called **__Ciphertext____**.
2. A(n) **__polyalphabetic_____** cipher maps a single plaintext character to multiple ciphertext characters.
3. A(n) **___transposition_____** cipher rearranges the letters without changing them.
4. A(n) **_block__** cipher manipulates an entire block of plaintext at one time.
5. The **__AES_____**was specifically designed to replace the weaker Data Encryption Standard (DES).
6. While most attacks today take advantage of vulnerabilities that someone has already uncovered, a(n) **____day zero ___** occurs when a hacker discovers and exploits a previously unknown flaw.
7. A(n) **__token_____**is a security device that is used to authenticate the user by having the appropriate permission embedded into it.
8. **__SSL____** is a protocol that can be used to encrypt transmission over the Internet.
9. Restricting users to the lowest level of permissions they need to do their job is called**___limiting____**
10. When an attacker sends out counterfeit e-mail messages to direct users to his own site this is called **___ phishing ____**
11. With a(n) **__ brute force ____** attack the attacker attempts to create every possible password combination by systematically changing one character at a time and then using each newly generated password to access the system.
12. A(n) **__ dictionary ____** attack takes each word from a dictionary and encodes it in the same way in which the computer would encode a user's password.

13. A(n) __ **buffer overflow**____ occurs when a computer program attempts to stuff more data into a temporary storage area than it can hold, overwriting valid computer data

14. Authentication based on a secret code you have memorized is an example of authentication by What you **_know**_____

15. Using your fingerprint to access a system is an example of authentication by what you _____**_are_**____

16. The ___**tunnel**__ mode of IPsec is used to implement VPN.

17. To prevent replay attacks ____**sequence number**____ is used in the IPsec protocol.

18. The **__CRL_**_____ is a list of serial numbers of certificates that are no longer valid .

19. In a **__Bridge**_____ trust model, one CA is not subordinate to another CA, and each root CA issues a certificate for the other root CA.

20. The ____**CA**___ _ is the trusted authority for certifying individuals' identities and creating digital certificates.

21. The __**X.509**____ is the standard for digital certificates .

22. The **_RA**_____ is the organization that may be used to identify an individual for certificate issue .

23. The ___**Escrow**_____ is the process of storing keys for use by law enforcement when the need arises.

24. The ___**CPS**_____ is the document that describes how a CA issues certificates and what they are used for.

25. (Spoofing / **<u>Snooping</u>**) ___ occurs when someone looks thru your files , either paper or electronic.