



B.E/B.TECH DEGREE EXAMINATIONS: NOV/DEC 2024

(Regulation 2020)

Third Semester

MASTER OF COMPUTER APPLICATIONS

P20CAE0233: Network Security Administration

COURSE OUTCOMES

- CO1:** Identify types of security attacks, services and mechanisms.
CO2: Interpret the implementation of Internetwork security model and its standards.
CO3: Illustrate Email privacy system and compare Pretty Good Privacy (PGP) and S/MIME.
CO4: Interpret the primary components of a Three-Tier Architecture and explain how they work together firewall environment.
CO5: Explain how communication is secured and how traffic is routed in firewall environment.

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 2 = 20 Marks)

(Answer not more than 40 words)

- | | | |
|---|-----|-------------------|
| 1. Define the three fundamental security objectives. | CO1 | [K ₁] |
| 2. List the pervasive security mechanisms used for OSI security service. | CO1 | [K ₁] |
| 3. Mention the difference between substitution and transposition. | CO2 | [K ₁] |
| 4. Outline the design objectives of HMAC. | CO2 | [K ₂] |
| 5. Categorize the documents of IPsec. | CO3 | [K ₂] |
| 6. Relate how traditional IP varies from IPsec. | CO3 | [K ₂] |
| 7. Summarize on SecurID authentication method to create an user account in smart console. | CO4 | [K ₂] |
| 8. Identify the need for ordered layers and inline layers. | CO4 | [K ₃] |
| 9. Compare threat emulation and threat extraction. | CO5 | [K ₂] |
| 10. Explain about anti-bot software blade. | CO5 | [K ₂] |

Answer any FIVE Questions:-

PART B (5 x 16 = 80 Marks)

(Answer not more than 400 words)

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|--|---|-----|-------------------|
| 11. a) Organize how ARP poisoning attack is carried out with Ettercap/Bettercap tool to spoof the user data. | 8 | CO1 | [K ₃] |
| b) Identify the ways how format string vulnerabilities are exploited with relevant examples. | 8 | CO1 | [K ₃] |

12. Apply Playfair substitution on the following Playfair Matrix and encrypt the plain text: 16 CO2 [K₃]

Plain Text: *I only regret that I have but one life to give for my country.*

Playfair Matrix:

J/K	C	D	E	F
U	N	P	Q	S
Z	V	W	X	Y
R	A	L	G	O
B	I	T	H	M

13. a) Model the digital signature service provided by PGP to maintain confidentiality of the message. 8 CO3 [K₃]
 b) Describe how transport mode IPsec ESP service is built in a network for encryption and authentication. 8 CO3 [K₂]
14. a) Compare and classify the methods used to assign permission profile to an administrator. 8 CO4 [K₂]
 b) Solve a failure in secure internal communication using troubleshooting mechanisms. 8 CO4 [K₃]
15. a) Organize the steps followed for NAT configuration in WINDOWS operating system. 8 CO5 [K₃]
 b) Outline the process of constructing a local site to site VPN tunnel. 8 CO5 [K₃]
16. a) Illustrate how message digest is generated using SHA-512 for an input message. 8 CO2 [K₂]
 b) Utilize the **Key:** *Redteam* to encrypt the **Plaintext:** *I am an offender to safeguard data* using columnar transposition technique. 8 CO2 [K₃]
