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**UNIVERSITI TUN HUSSEIN ONN MALAYSIA**

**FINAL EXAMINATION  
SEMESTER II  
SESSION 2023/2024**

COURSE NAME : COMPUTER NETWORK  
COURSE CODE : BIC 21303  
PROGRAMME CODE : BIS/BIP/BIW/BIM  
EXAMINATION DATE : JULY 2024  
DURATION : 3 HOURS  
INSTRUCTION :  
1. ANSWER ALL QUESTIONS  
2. THIS TEST IS CONDUCTED VIA  
 Open book  
 Closed book  
3. STUDENTS ARE **PROHIBITED** TO  
CONSULT THEIR OWN MATERIAL  
OR ANY EXTERNAL RESOURCES  
DURING THE EXAMINATION  
CONDUCTED VIA CLOSED BOOK

THIS QUESTION PAPER CONSISTS OF SIX (6) PAGES

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**PART A**

Instruction: Choose the **BEST** answer for each of the following questions.

**Q1** What is the benefit of using segmented network design?

- (a) It simplifies network troubleshooting.
- (b) It reduces network latency.
- (c) It allows for easier scalability.
- (d) It increases network security.

(2 marks)

**Q2** What is the purpose of Quality of Service (QoS) in network design?

- (a) To prioritize certain types of network traffic.
- (b) To encrypt all network communications.
- (c) To provide redundancy in the network.
- (d) To segment the network into smaller parts.

(2 marks)

**Q3** Which of the following is **NOT** a common security measure for protecting against phishing attacks?

- (a) Antivirus software.
- (b) Email filtering.
- (c) User awareness training.
- (d) Two-factor authentication.

(2 marks)

**Q4** A company's network experiences a ransomware attack, encrypting critical data and demanding payment for decryption. What security measure should the administrator implement to protect against ransomware attacks?

- (a) Regular data backups.
- (b) Intrusion Prevention System (IPS).
- (c) Biometric authentication.
- (d) Virtual Private Network (VPN).

(2 marks)

**Q5** Which of the following is **NOT** a common security measure for protecting against malware?

- (a) Antivirus software.
- (b) Firewalls.
- (c) Intrusion Detection System (IDS).
- (d) Encryption.

(2 marks)

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- Q6** What is the purpose of redundancy in network design?
- (a) To increase network security.
  - (b) To decrease network latency.
  - (c) To provide backup in case of network failures.
  - (d) To reduce network complexity.
- (2 marks)
- Q7** Which Open System Interconnection (OSI) layer is responsible for translating Internet Protocol (IP) addresses to Media Access Control (MAC) addresses?
- (a) Physical Layer.
  - (b) Data Link Layer.
  - (c) Network Layer.
  - (d) Transport Layer.
- (2 marks)
- Q8** The loopback address is used for \_\_\_\_\_ in IPv4.
- (a) communication with devices on the same local network
  - (b) communication with devices on different networks
  - (c) communication with oneself for testing purposes
  - (d) identifying the default gateway
- (2 marks)
- Q9** The purpose of a default gateway in a Transmission Control Protocol/Internet Protocol (TCP/IP) network is \_\_\_\_\_.
- (a) to assign IP addresses to devices on the network
  - (b) to provide a central point for network monitoring
  - (c) to forward packets to destinations outside the local network
  - (d) to manage domain name resolution
- (2 marks)
- Q10** Which of the following IP address classes is designed for small networks and can have a maximum of 254 hosts per network?
- (a) Class A
  - (b) Class B
  - (c) Class C
  - (d) Class D

(2 marks)



**PART B**

**Q11** You have been assigned to design network infrastructure for a SecRed Corporation that operates in multiple locations worldwide. The company consists of four departments: Sales, Marketing, Finance, and Human Resources, each with its own set of network requirements. Additionally, the company has two branch offices located in different location (Melaka and Selangor). The network design must include a Demilitarized Zone (DMZ) area with several servers such as web servers, email servers, and database servers, multiple switches and routers to connect the departments and branches, and a firewall to protect the network perimeter.

Based on the given scenario, answer the following questions.

- (a) Draw a network diagram for SecRed Corporation. Label your diagram.  
(7 marks)
- (b) Explain the purpose of the firewall in network security and how it helps to protect internal resources from external threats.  
(2 marks)
- (c) Describe the role of each server hosted in the DMZ.  
(3 marks)
- (d) Suggest **FOUR (4)** approaches to mitigate network attacks to SecRed Corporation.  
(8 marks)

**Q12** Answer **ALL** questions.

- (a) What is the main purpose of Media Access Control (MAC)?  
(2 marks)
- (b) Compare and contrast between the following Media Access Control (MAC).
  - (i) IEEE 802.3 and IEEE 802.11.  
(4 marks)
  - (ii) Media Access Control (MAC) Sublayer and Logical Link Control (LLC) Sublayer.  
(4 marks)

**Q13** Answer **ALL** questions.

- (a) State the function of Application Layer in OSI 7 layer.  
(2 marks)
- (b) Discuss the following application layer protocols:
  - (i) Hypertext Transfer Protocol (HTTP)  
(4 marks)

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- (ii) Domain Name Service (DNS)

(4 marks)

**Q14** Answer **ALL** questions.

- (a) Discuss **THREE (3)** reasons for performing error detection and correction with transmitted data through computer network.

(6 marks)

- (b) Describe the process of performing error correction for the following methods:

- (i) Checksum

(4 marks)

- (ii) Parity Check

(4 marks)

- (iii) Cyclic Redundancy Check (CRC)

(6 marks)

**Q15** Given the following scenario:

Miniminimo Networks Sdn Bhd has hired you to advise on their new high speed enterprise network. After interviewing its IT Head, Dr. Magomed, the following information has been determined:

Headquarters: Kuala Lumpur

No.	Department	Number of network node required
1.	Deployment Access	155
2.	Deployment Infra	120

Southern Branch: Batu Pahat

No.	Department	Number of network node required
1.	Sales	122
2.	Executives	10

3 legal IPs have been purchased from Jaring - 199.10.1.0, 199.10.2.0, 199.10.3.0 each with default subnet mask 255.255.255.0. Besides that, they also have decided to provide an email service to their staff, a web site to promote their company and a streaming server. All nodes will be accessing the Internet using these legal IP, no internal IP addressing is allowed.

- (a) Produce a table that tabulates all the subnets. Consider the following information to be included in your table:

- Given IP.
- Subnet Address.
- Subnet Mask.
- Number of Host Supported.



- Number of Host Needed.
- Address Range.
- Broadcast Address.
- Gateway Address.
- Assigned to which department.

(8 marks)

(b) Using your table in **Q15(a)**, generate address configurations for the following devices:

(i) **ONE (1)** router.

(2 marks)

(ii) **ONE (1)** server.

(2 marks)

(c) Write a configuration command for the following network devices:

(i) **ONE (1)** router (choose any).

(4 marks)

(ii) **ONE (1)** switch (choose any).

(4 marks)

**- END OF QUESTIONS -**

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