



FINAL EXAMINATION
NOVEMBER 2023

COURSE TITLE	DATA COMMUNICATION AND COMPUTER NETWORKING
COURSE CODE	RCIT4623
DATE/DAY	22 FEBRUARY 2024 / THURSDAY
TIME/DURATION	09:00 AM - 11:00 AM / 02 Hour(s) 00 Minute(s)

INSTRUCTIONS TO CANDIDATES :

1. Please read the instruction under each section carefully.
2. Candidates are reminded not to bring into examination hall/room any form of written materials or electronic gadget except for stationery that is permitted by the Invigilator.
3. Students who are caught breaching the Examination Rules and Regulation will be charged with an academic dishonesty and if found guilty of the offence, the maximum penalty is expulsion from the University.

(This Question Paper consists of 6 Printed Pages including front page)

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This question paper consists of TWO (2) sections. Answer ALL questions in the answer booklet provided. [50 MARKS]

SECTION A

(20 Marks)

There are TWENTY (20) questions on this part of the examination paper. Answer ALL questions in the answer booklet.

1. What is the primary purpose of data communication?
 - A. Data storage
 - B. Data manipulation
 - C. Data transmission
 - D. Data processing

2. Which of the following is **NOT** the fundamental characteristics of data communication?
 - A. Delivery
 - B. Accuracy
 - C. Timeliness
 - D. Throughput

3. Which of the following is the component of data communication?
 - A. Packet
 - B. Message
 - C. Language
 - D. Router

4. What does the term "bandwidth" refer to in the context of data communication?
 - A. The size of the data
 - B. The speed of data transmission
 - C. The range of data transmission ROM
 - D. The format of the data

5. What is simplex mode in data communication?
 - A. Unidirectional communication
 - B. Multidirectional communication
 - C. Multidirectional and non-simultaneous communication
 - D. Multidirectional and simultaneous communication

6. Which of the following is **NOT** included in the network criteria?
 - A. Performance
 - B. Reliability
 - C. Security
 - D. Availability

7. What is the purpose of the OSI model in data communication?
 - A. To design computer hardware
 - B. To standardize network protocols
 - C. To develop operating systems
 - D. To create programming languages

8. Which layer of the OSI model is responsible for routing and addressing in a network?
 - A. Physical layer
 - B. Data link layer
 - C. Network layer
 - D. Transport layer

9. What is the purpose of error detection and correction in data communication?
 - A. To prevent data transmission
 - B. To identify and correct errors in transmitted data
 - C. To slow down data transmission
 - D. To increase data storage capacity

10. What is the function of CRC field in the Ethernet frame?
- A. Error-detection information
 - B. Internet Protocol address information
 - C. MAC address information
 - D. Upper-layer protocol information
11. Which protocol is commonly used for sending emails over the Internet?
- A. SMTP
 - B. FTP
 - C. HTTP
 - D. TCP
12. What does the term "multiplexing" refer to in data communication?
- A. Transmitting data as a continuous stream
 - B. Combining multiple signals into a single channel
 - C. Breaking data into small packets for transmission
 - D. Converting analog signals to digital signals
13. In networking, what is the purpose of the subnet mask?
- A. To identify the network portion of an IP address
 - B. To convert digital signals to analog signals
 - C. To route data between networks
 - D. To amplify signals for long-distance transmission
14. What is the purpose of the ARP protocol in a data communication network?
- A. To ensure reliable end-to-end communication
 - B. To route data between networks
 - C. To convert IP addresses to MAC addresses
 - D. To amplify signals for long-distance transmission

15. Which security protocol is commonly used to secure Wi-Fi networks?
- A. WEP
 - B. WPA
 - C. SSL
 - D. TLS
16. Which of the following is **NOT** a routing protocol in data communication?
- A. Routing Information Protocol (RIP)
 - B. Open Shortest Path First (OSPF)
 - C. Border Gateway Protocol Version 4 (BGP 4)
 - D. Enhanced Exterior Gateway Routing Protocol (EEGRP)
17. Which of the following is **TRUE** about the criteria of User Datagram Protocol (UDP)?
- A. Connectionless
 - B. Connection-oriented
 - C. Reliable
 - D. Complex header
18. _____ is a device (usually a router or a computer) that is installed between the internal network of an organization and the rest of the Internet. It is designed to forward and filtered some packets.
- A. Firewall
 - B. Cryptography
 - C. Gateway
 - D. Cipher
19. Which of the following is **CORRECT** on the definition of Steganography?
- A. Concealing the contents of the message by covering it with something else.
 - B. Concealing the contents of the message by enciphering
 - C. Keys that have the same encryption and decryption
 - D. A character in the plaintext

20. What is the function of authentication data field in header of IPSec?
- A. Result of applying a hash function to the entire IP datagram except for the fields that are changed during transit
 - B. Provides ordering information for a sequence datagram
 - C. Plays the role of a virtual circuit identifier
 - D. Defines the type of payload carried by the IP datagram DMA

SECTION B

(30 Marks)

There are **TWO (2)** questions in this part of the examination paper. Answer **ALL** questions in the answer booklet.

1. In data communication, a number of methods can be applied when transmitting the data.
- a) List down **THREE (3)** methods of data communication. (3 marks)
 - b) Explain each of the methods mentioned in Q1(a). (6 marks)
 - c) Describe the differences in terms of addresses for methods mentioned in Q1(a). (6 marks)
2. Transmission Control Protocol (TCP) is a connection-oriented protocol and transmits data in full-duplex mode. The TCP has to establish a connection before data is sent.
- a) Name the TCP connection establishment process. (2 marks)
 - b) Define the **TWO (2)** flags used in the process mentioned in Q2 (a). (4 marks)
 - c) Illustrate the **THREE (3)** step processes that happened in Q2 (a). (9 marks)

***** END OF QUESTION PAPER *****



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