UNIRAZAK
UNIVERSITI TUN ABDUL RAZAK

FINAL EXAMINATION

MARCH 2024

COURSE TITLE	**COMPUTER NETWORKING**
COURSE CODE	**RCIT1243**
DATE/DAY	**19 JUNE 2024 / WEDNESDAY**
TIME/DURATION	**02:00 PM - 04:00 PM / 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 **7** Printed Pages including front page)

*****DO NOT OPEN THE QUESTION PAPER UNTIL YOU ARE TOLD TO DO SO*****

This question paper contains TWO (2) sections in this examination paper. Please answer ALL questions in the answer booklet. [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. Which command can be used on a cisco router to display the routing table?

   A. netstat -s
   B. show ip route
   C. netstat - r
   D. tracert

2. What information is added during encapsulation at OSI Layer 2?

   A. source and destination Internet Protocol (IP) address.
   B. source and destination MAC address.
   C. source and destination port number.
   D. Source and destination application protocol.

3. What characteristic describes an IPv6 enhancement over IPv4?

   A. IPv6 addresses are based on 128-bit flat addressing as opposed to IPv4 which is based on 32-bit hierarchical addressing.
   B. The IPv6 header is simpler than the IPv4 header which improves packet handling.
   C. Both IPv4 and IPv6 support authentication, but only IPv6 supports privacy capabilities.
   D. The IPv6 address space is four times bigger than the IPv4 address space.

4. Which statement accurately describes a characteristic of IPv4?

   A. All IPv4 addresses are assigned to hosts.
   B. IPv4 has a 32-bit address space.
   C. An IPv4 header has fewer fields than an IPv6 header.
   D. IPv4 natively supports IPsec.

5. When a router receives a packet, what information must be examined in order for the packet to be forwarded to a local destination?

   A. Destination MAC address
   B. Source IP address
   C. Destination IP address
   D. Source MAC address

6. What is the significant difference between a hub and a Layer 2 LAN switch?

   A. A hub extends a collision domain, and a switch divides collision domain.
   B. A hub divides collision domains and a switch divide broadcast domain.
   C. Each port of a hub is collision domain, and each port of a switch is a broadcast domain.
   D. A hub forwards frames and a switch forward only packets.

7. Which standard specifies the Ethernet MAC sublayer functionality in a NIC?

   A. IEEE 802.3
   B. IEEE 802.2
   C. IEEE 802.15
   D. IEEE 802.11

8. On a router, what field in an IPv4 header should be examined to determine that the maximum number of hopes has been reached by the packet on its way from the source to this destination?

   A. Version.
   B. Time-to-Live (TTL).
   C. Protocol.
   D. Destination IPv4 address.

9. What is an advantage that User Datagram Protocol (UDP) has over Transport Control Protocol (TCP)?

   A. Advanced flow control
   B. Low overhead
   C. Reordering of segments
   D. Reliable delivery

10. Which statement is **TRUE** about File Transfer Protocol (FTP)?

    A. The client can choose if FTP is going to establish one or two connections with the server.
    B. The client can download data from server or upload data to the server.
    C. FTP is a peer-to-peer application.
    D. FTP does not provide reliability during data transmission.

11. Which application layer protocol uses encryption in transmitting data?

    A. DHCP.
    B. DNS.
    C. FTP.
    D. HTTPS.

12. What does the IP address 172.17.4.250/24 represent?

    A. network address
    B. multicast address
    C. host address
    D. broadcast address

13. What are **TWO (2)** advantages of subnetting a large network?

    I. More address space is created.
    II. Overall network traffic is reduced.
    III. IP addresses can be reused on the same subnetwork.
    IV. Network performance is improved.

    A. I and II only.
    B. II and III only.
    C. II and IV only.
    D. I and IV only.

14. What is a network vulnerability?

    A. The degree of weakness inherent in a network.
    B. Tools used to launch attacks against a network.
    C. Individuals interested and qualified in taking advantage of security weaknesses.
    D. Ping of death.

15. Which **TWO (2)** statements describe the IP address 10.16.3.65/23?

I. The subnet address is 10.16.3.0 255.255.254.0
II. The lowest host address in the subnet is 10.16.2.1 255.255.254.0
III. The last valid host address in the subnet is 10.16.2.254
IV. The broadcast address of the subnet is 10.16.3.255 255.255.254.0

A. I and III only
B. II and IV only
C. I and II only
D. II and III only

16. Which type of IPv6 address is not routable and used only for communication on a single subnet?

A. global unicast address
B. link-local address
C. loopback address
D. unique local address

17. What is the purpose of the command ping ::1?

A. It tests the internal configuration of an IPv6 host.
B. It tests the broadcast capability of all hosts on the subnet.
C. It tests the multicast connectivity to all hosts on the subnet.
D. It tests the reachability of the default gateway for the network.

18. A junior network technician is assigning host addresses to devices in the 201.152.1.0/25 subnet. The departmental printer is assigned the address 201.152.1.131/25 with a 201.152.1.1/25 default gateway. No one in the department was unable to print. What is the cause of the problem?

A. The default gateway is not correct for the departmental subnet.
B. The server has been assigned a broadcast IP address.
C. The server has been assigned an address on another subnet.
D. The server has been assigned a network IP address.

19. Which TCP header field specifies the number of bytes that can be accepted before an acknowledgement is required?

    A. Acknowledgement number
    B. Header length
    C. Window size
    D. Checksum

20. Which network protocol should a network administrator use to remotely configure a network device?

    A. File Transfer Protocol (FTP)
    B. Hyper Text Transfer Protocol (HTTP)
    C. Telnet
    D. Secure Shell (SSH)

SECTION B **(30 Marks)**

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

1. The transport layer is responsible for establishing a temporary communication session between two applications and delivering data between them.

    i. Define **TWO (2)** transport layer protocols.

    (2 marks)

    ii. Draw the **TWO (2)** transport layer protocols header.

    (4 marks)

    iii. Briefly explain the functions of each layer for the **TWO (2)** transport layer protocols header.

    (9 marks)

2. The given host IP address is 172.105.1.55, original subnet mask is 255.255.0.0 and the new subnet mask is 255.255.224.0. Find the network number of Subnet bits, Number of Subnets Created, Number of Hosts Bits per Subnet, Number of Hosts per Subnet, Network Address of the Second Subnet, IPv4 address of First Host on the Second Subnet, IPv4 address of Last Host on the Second Subnet, and IPv4 Broadcast Address on the Second Subnet. **Show your work clearly and fill in the answers in the table below.**

Table 1. Subnetting Information

Given	
Host IP Address	172.105.1.55
Original Subnet Mask	255.255.0.0
New Subnet Mask	255.255.224.0
Answers	
Number of Subnet Bits	
Number of Subnets Created	
Number of Host Bits per Subnet	
Number of Hosts per Subnet	
Network Address of Second Subnet	
IPv4 address of First Host on the Second Subnet	
IPv4 address of Last Host on the Second Subnet	
IPv4 Broadcast Address on the Second Subnet	

(15 marks)

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