UTHM
Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER II
SESSION 2017/2018

COURSE NAME	:	COMPUTER NETWORKS
COURSE CODE	:	BIC 21303
PROGRAMME CODE	:	BIS / BIP / BIW / BIM
EXAMINATION DATE	:	JUNE / JULY 2018
DURATION	:	3 HOURS
INSTRUCTION	:	ANSWER **ALL** QUESTIONS

THIS QUESTION PAPER CONSISTS OF **ELEVEN (11)** PAGES

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

Q1 Which one is **NOT** a valid subnet mask?

A. 255.255.255.254
B. 255.255.224.0
C. 255.250.0.0
D. All of the above

Q2 What is the subnet address for host 12.2.2.127/16?

A. 12.2.0.0
B. 12.2.2.0
C. 12.2.2.112
D. None of the above

Q3 Which of the following is a device or function whose most notable feature is to encrypt packets before they pass through the Internet?

A. Virtual Private Network (VPN).
B. Firewall.
C. Intrusion Detection System (IDS).
D. Mandatory Access Control (MAC).

Q4 In the URL `http://www.superskills.com/ws.html`, which part identifies the web server?

A. http
B. www.superskills.com
C. superskills.com
D. http://www.superskills.com
E. The file ws.html includes the hostname.

Q5 Which of the following does a router normally use when making a decision about routing TCP/IP packets?

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

Q6 Which term shows Gigabit Ethernet over Unshielded Twisted Pair?

A. 1000BaseSX.
B. 1000BaseCX.
C. 1000BaseT.
D. None of the above.

Q7 Which standardization organization is responsible for the 802.3 standard?

A. The International Standards Organization (ISO).
B. The International Telecommunications Union (ITU).
C. The Institute of Electrical and Electronics Engineers (IEEE).
D. None of the above.

Q8 The length of Media Access Control (MAC) address is of _____.

A. 36 bits
B. 42 bits
C. 48 bits
D. 96 bits

Q9 Which of the following is **NOT** a network device?

A. Gateway.
B. Linux.
C. Router.
D. Firewall.

Q10 What is the use of a ping command?

A. To view the delay time.
B. To test if the device on the network is reachable.
C. To view router hops.
D. All of the above.

Q11 Which of the following protocols are TCP/IP transport layer protocols? (Choose **TWO (2)** answers.)

A. Ethernet.
B. HTTP.
C. IP.
D. UDP.
E. SMTP.
F. TCP.

Q12 A process in which a web server adding a TCP header to the contents of a web page, followed by adding an IP header, and then adding a data link header and trailer is known as _____.

A. Data encapsulation
B. Same-layer interaction
C. OSI model
D. Data segmentation

Q13 Protocol Data Unit (PDU) created at data link layer is known as _____.

A. Data.
B. Segment
C. Frame.
D. Packet.
E. Bit.

Q14 Which of the following terms are **NOT** valid terms for the names of the seven OSI layers? (Choose **TWO (2)** answers.)

A. Application.
B. Data link.
C. Transmission.
D. Presentation.
E. Internet.
F. Session.

Q15 Which of the following is **TRUE** about Ethernet crossover cables?

A. Pins 1 and 2 are reversed on the other end of the cable.
B. Pins 1 and 2 on one end of the cable connect to pins 3 and 6 on the other end of the cable.
C. Pins 1 and 2 on one end of the cable connect to pins 3 and 4 on the other end of the cable.
D. The cable can be up to 1000 meters long to cross over between buildings.
E. None of the other answers is correct.

Q16 Which of the following is **TRUE** about the CSMA/CD algorithm?

A. The algorithm never allows collisions to occur.
B. Collisions can happen, but the algorithm defines how the computers should notice a collision and how to recover.
C. The algorithm works with only two devices on the same Ethernet.
D. None of the other answers is correct.

Q17 Which of the following is **TRUE** about the Frame Check Sequence (FCS) field used in Ethernet?

A. It is used for error recovery.
B. It is 2 bytes long.
C. It resides in the Ethernet trailer, not the Ethernet header.
D. It is used for encryption.

Q18 Which of the following are functions of OSI Layer 3 protocols? (Choose **TWO (2)** answers.)

A. Logical addressing.
B. Physical addressing.
C. Path selection.
D. Packet segmentation.
E. Error recovery.

Q19 Which of the following are valid Class C IP addresses that can be assigned to hosts?

A. 1.1.1.1
B. 200.1.1.1
C. 128.128.128.128
D. 224.1.1.1
E. 223.223.223.255

Q20 Each Class C network contains how many IP addresses that can be assigned to hosts?

A. 65,534
B. 65,532
C. 32,768
D. 32,766
E. 256
F. 254

(40 marks)

SECTION B

Q21 a) A message 100101110110 is to be transmitted using a CRC polynomial $x^4 + x^2+x+ 1$.

(i) What is the transmitted message? Show your work.

(ii) How does the receiver side know that there is no error in the received message? Show your work.

(8 marks)

b) Specify and justify suitable transmission media for the following case studies:

(i) A research room with noisy electromagnetic wave.

(ii) A weather station is to be built on a newly discovered island just off the coast of Mersing Beach. This station is to be connected to a server located nearby the Mersing Beach.

(8 marks)

(c) Consider the following diagram:

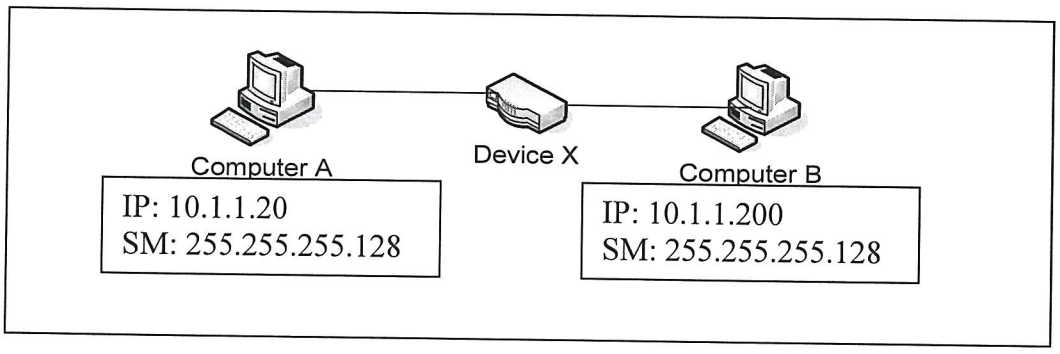

FIGURE Q21

(i) How many subnet(s) exist in Figure **Q21**? List all of them. (Show your work.)

(3 marks)

(ii) Assuming pinging from Computer A to Computer B is successful, what is Device X?

(1 mark)

Q22 Consider the following diagram:

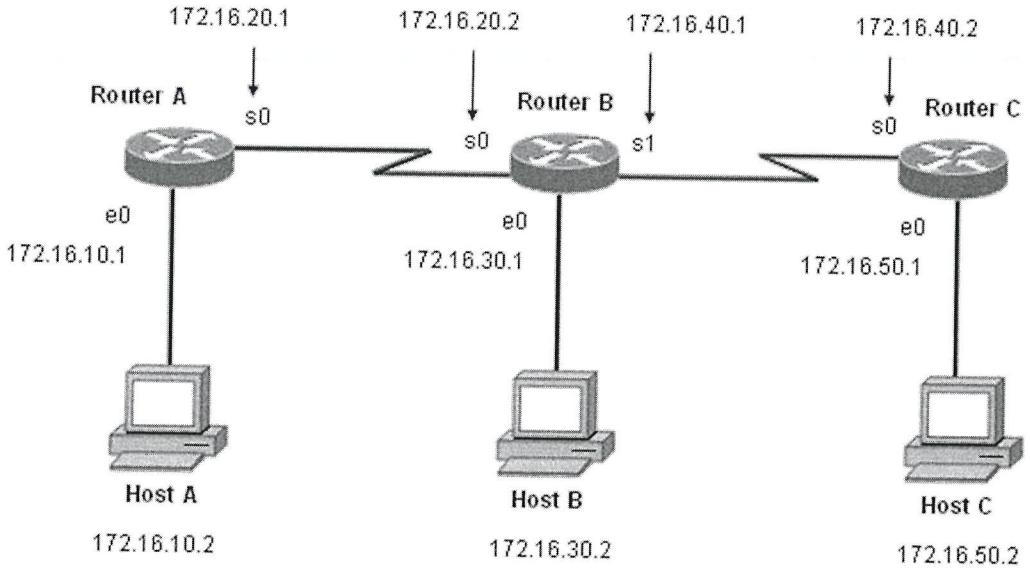

Figure Q22

Write suitable Internetwork Operating System (IOS) **commands** to perform the following tasks:

(a) From user EXEC mode, enter user Privilege EXEC mode.

(2 marks)

(b) From user Privileged EXEC mode, enter Global Configuration mode.

(2 marks)

(c) Enter Interface `FastEthernet0/0` Mode.

(2 marks)

(d) Configure `FastEthernet0/0` with IP address 172.16.10.1 and default subnet.

(2 marks)

(e) Activate Interface `GigabitEthernet0/0`.

(2 marks)

(f) Save current configuration.

(2 marks)

(g) Configure `Serial0` with IP address 172.16.20.1.

(2 marks)

(h) Activate interface `Serial0`.

(2 marks)

(i) Set the clock rate of 128000 bits per seconds for the interface `Serial0`.

(2 marks)

(j) View all the IOS commands saved in running-config.

(2 marks)

Q23 Given the following scenario:

Haihai Spid Networks Sdn Bhd has hired you to advice on their new high speed enterprise network. After interviewing its IT Head, Dr. Zapie Gamelov, the following information has been determined:

Headquarters: Kuala Lumpur

No.	Department	Number of network node required
1.	Deployment Access	150
2.	Deployment Infra	120
3.	R&D Department	50
4.	Strategic Planning	14

Southern Branch: Batu Pahat

No.	Department	Number of network node required
1.	Sales	123
2.	Executives	5
3.	Product Development	22

3 legal IPs have been purchased from Jaring – 190.1.1.0, 190.1.2.0, 190.1.3.0 each with default subnet mask 255.255.255.0. Besides that, they also have decided to provide email service to their staff, a web site to promote their company and also a streaming server. All nodes will be accessing the Internet using these legal IP, no internal IP addressing is allowed.

(a) Design a network diagram for Haihai Spid Networks Sdn Bhd.

(3 marks)

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

(i) Given IP
(ii) Subnet Address
(iii) Subnet Mask
(iv) Number of Host Supported
(v) Number of Host Needed
(vi) Address Range
(vii) Broadcast Address
(viii) Gateway Address
(ix) Assigned to which department

(12 marks)

(c) Using your answer in **Q23(b)**, generate address configurations for the following devices:

(i) all routers

(2 marks)

(ii) all servers

(3 marks)

- END OF QUESTION -