UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER II
SESSION 2018/2019

COURSE NAME	:	NETWORK AND DATA COMMUNICATION
COURSE CODE	:	BIT 20703
PROGRAMME CODE	:	BIT
EXAMINATION DATE	:	JUNE / JULY 2019
DURATION	:	3 HOURS
INSTRUCTION	:	ANSWER **ALL** QUESTIONS

THIS QUESTION PAPER CONSISTS OF **NINE (9)** PAGES

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

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

A. 255.255.255.254
B. 255.255.220.0
C. 255.255.0.0
D. All of the above

Q2 What is the subnet address for host 150.5.150.5/20?

A. 150.5.0.0
B. 150.5.144.0
C. 150.5.150.0
D. None of the above

Q3 Currently, a host is 128.2.2.64/16 in the current network. The organization needs 9 subnets. What is a suitable subnet prefix length and borrow bits for this organization?

A. /18 or 2 borrow bits.
B. /19 or 3 borrow bits.
C. /20 or 4 borrow bits.
D. None of the above.

Q4 Which destination address is used in an Address Resolution Protocol (ARP) request frame?

A. 0.0.0.0
B. 255.255.255.255
C. FFFF.FFFF.FFFF
D. 127.0.0.1

Q5 What service defines the protocols and technologies that implement the transmission of voice packets over an IP network?

A. Voice Over IP (VoIP).
B. Quality of Service (QoS).
C. Network Address Translation (NAT).
D. Dynamic Host Configuration Protocol (DHCP).

Q6 What is an advantage for small organizations of adopting Internet Message Access Protocol (IMAP) instead of Post Office Protocol (POP)?

A. Messages are kept in the mail servers until they are manually deleted from the email client.
B. When the user connects to a POP server, copies of the messages are kept in the mail server for a short time, but IMAP keeps them for a long time.
C. IMAP sends and retrieves email, but POP only retrieves email.
D. POP only allows the client to store messages in a centralized way, while IMAP allows distributed storage.

Q7 What is a socket?

A. The combination of the source and destination IP address and source and destination Ethernet address.
B. The combination of a source IP address and port number or a destination IP address and port number.
C. The combination of the source and destination sequence and acknowledgment numbers.
D. The combination of the source and destination sequence numbers and port numbers.

Q8 What is the advantage of IPv6 simplified header over IPv4?

A. Smaller-sized header.
B. Little requirement for processing checksums.
C. Smaller-sized source and destination IP addresses.
D. Efficient packet handling.

Q9 What is the binary equivalent of the decimal number 233?

A. 11101001
B. 11000110
C. 10011000
D. 11110010

Q10 A Dynamic Host Configuration Protocol (DHCP) server is used to assign IP addresses dynamically to the hosts on a network. The address pool is configured with 192.168.10.0/24. There are 3 printers on this network that need to use reserved static IP addresses from the pool. How many IP addresses in the pool are left to be assigned to other hosts?

A. 254
B. 251
C. 252
D. 253

(20 marks)

SECTION B

Q11 (a) Illustrate the Open System Interconnection (OSI) layers and give **FIVE** (**5**) examples of protocol at its appropriate layer.

(10 marks)

(a) Illustrate encapsulation process according to protocol data unit (PDU) for OSI layers.

(10 marks)

Q12 (a) Analyze the given subnet by using the following information:

```
Network IP Address      : 200.20.20.0
Subnet Mask             : 255.255.255.224
```

(i) How many usable subnets?

(ii) What is the address for the third subnet?

(iii) What is the first usable IP address in this subnet?

(iv) What is the last usable IP address in this subnet?

(v) What is the broadcast address for this subnet?

(10 marks)

(b) Analyze the given subnet by using the following information:

```
Network IP Address      : 99.0.0.0
Subnet Mask             : 255.240.0.0
```

(i) How many usable subnets?

(ii) What is the address for the third subnet?

(iii) What is the first usable IP address in this subnet?

(iv) What is the last usable IP address in this subnet?

(v) What is the broadcast address for this subnet?

(10 marks)

Q13 Configure router R1 in Figure **Q13** using the information given below:

```
Subnet A: 100.0.0.0/10
Subnet B: 200.20.0.0/19

G0/0 is using the FIRST IP address from SECOND subnet of Subnet
A.
G0/1 is using the LAST IP address from THIRD subnet of Subnet B.
```

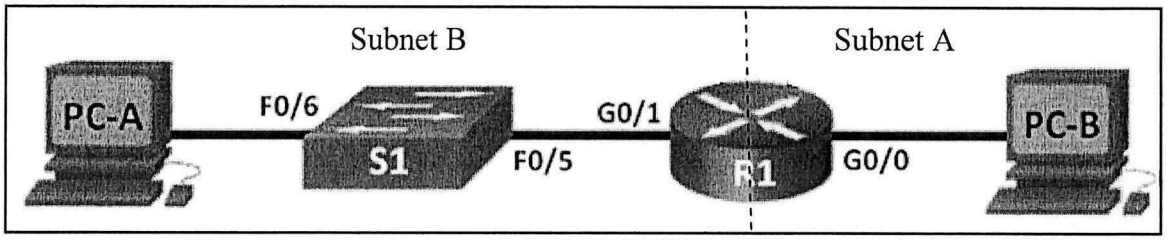

FIGURE Q13

a. Analyze the subnetting design by filling in the information in Table **Q13(a)** and Table **Q13(b)** for R1 (write in your answer book).

TABLE Q13(a)

Subnet A	
G0/0 is using the **FIRST** IP address from **SECOND** subnet of Subnet A. G0/0	
Borrow bit	
Subnet mask	in decimal: _____ in binary : _____
First subnet	
Second subnet	
	FIRST IP ADDR : _____ **LAST IP ADDR** : _____ **BROADCAST ADDRESS:** _____
Third subnet	
Fourth subnet	

(10 Marks)

TABLE Q13(b)

Subnet B	
G0/1 is using the LAST IP address from **THIRD** subnet of Subnet B. G0/1	
Borrow bit	
Subnet mask	in decimal: _____ in binary : _____
First subnet	
Second subnet	
Third subnet	
	FIRST IP ADDR : _____ **LAST IP ADDR** : _____ **BROADCAST ADDRESS:** _____
Fourth subnet	

(10 Marks)

Q14 Identify suitable Internetwork Operating System Commands (IOS) for configuring router R1 in Figure **Q13**. Use the correct prompt for the Command Line Interface (CLI). Assume that the router's name has been changed to R1.

(a) Command for entering User Privilege Mode.

(2 marks)

(b) Command for entering Global Privilege Mode.

(2 marks)

(c) Command for entering Interface G0/0.

(2 marks)

(d) Command for setting G0/0 with IP address and subnet mask.

(2 marks)

(e) Command for activating Interface G0/0.

(2 marks)

(f) Command to go to previous level.

(2 marks)

(g) Command for entering Interface G0/1.

(2 marks)

(h) Command for setting G0/1 with IP address and subnet mask.

(2 marks)

(i) Command for saving current configuration.

(2 marks)

(j) Command for viewing all the IOS command saved in running-config.

(2 marks)

- END OF QUESTIONS -