

CONFIDENTIAL



UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER II
SESSION 2013/2014**

COURSE NAME : BASIC COMPUTER NETWORK
COURSE CODE : DAT21203
PROGRAMME : 2 DAT
EXAMINATION DATE : JUNE 2014
DURATION : 2 HOURS
INSTRUCTION : ANSWER **THREE (3)**
QUESTIONS ONLY

THIS QUESTION PAPER CONSISTS OF **SEVEN (7)** PAGES

CONFIDENTIAL

DAT21203

Q1 (a) Describe the purpose of the following OSI reference model layers;

- (i) Data link
- (ii) Physical
- (iii) Network
- (iv) Presentation
- (v) Session

(10 marks)

(b) Explain the following topologies:

- (i) Mesh
- (ii) Ring
- (iii) Star
- (iv) Bus
- (v) Tree

(10 marks)

(c) Explain the purpose of protocols in computer networking.

(5 marks)

Q2 (a) Describe the following network protocol.

- (i) PPP
- (ii) TCP
- (iii) UDP

(6 marks)

(b) Explain **THREE (3)** objectives of multiple subnets in a network.

(6 marks)

(c) Illustrate the LAN topology diagram for the following given small company devices;

Table Q2(d) : LAN IP addresses

Devices	IP address
Switch	-
Computer A, B, and C	192.168.0.10 to 13
Server	192.168.0.250
Router	192.168.0.1

(5 marks)

(d) Illustrate WAN topology diagram if the company in Q2(d) above expanded their company and requires to interconnect both LANs of similar devices. Show the IP addresses for the new LAN branches. Choose class B network IDs for this networks.

(8 marks)

DAT21203

Q3 (a) State the purpose of the following internetworking equipment;

(i) Bridge

(ii) Router

(iii) Switch

(6 marks)

(b) Calculate the number of nodes contains in the following subnet's IP addresses range.

(i) 192.168.1.0/24 to 192.168.1.125/24

(ii) 172.16.1.1/16 to 172.16.1.25/16

(iii) 10.1.1.0/8 to 10.1.1.50/8

(iv) 255.255.0.0/32 to 255.255.255.255/32

(16 marks)

(c) Calculate the time required for the data transfer between computer A and B if total of 300K byte data are to be transfer. The ideal data transmission between computer A and computer B trough a cable is measured as 150000 baud rate. The channel experiencing data collision that resulting transmission delays of about 10 Mbit per second (Mbps).

(3 marks)

DAT21203

Q4 (a) Determine the following broadcast IP address.

(i) 20.0.0.1/8

(ii) 200.0.0.1/16

(iii) 192.0.0.1/24

(iv) 190.0.0.1/16

(v) 220.0.0.1/24

(10 marks)

(b) Determine the host range of the following IPs and netmasks.

(i) 180.80.80.80 255.255.0.0

(ii) 90.90.90.90 255.0.0.0

(10 marks)

(c) Explain the steps of network subnetting.

(5 marks)

Q5 A restaurant company is required to establish a system for their employees that enable them for accessing their intranet ordering system by securely connected into the infrastructure using DHCP server. The network infrastructure system comprise of the following devices;

Table Q5: Infrastructure devices list

Devices	Quantity
Application server	1
DHCP server	1
Switch (24 ports)	1
Computers	3
Wireless access point	1
Mobile devices	3

- (a) State the importance of networking topology. (5 marks)
- (b) Determine the IP addresses and netmask for each devices in the table Q5(b) below using class C IP addresses.

Table Q5(b): IP and netmask addresses

Devices		IP address	Netmask address
Application server	APPS S1		
DHCP server	DHCP S1		
Switch (24 ports)	SW1		
Computers	PC1		
Computers	PC2		
Computers	PC3		
Wireless access point	WAP1		
Mobile devices	MD1		
Mobile devices	MD2		
Mobile devices	MD3		

(10 marks)

DAT21203

- (c) Illustrate the new topology for the customer if customers connected to a wireless network infrastructure through DHCP services.

(5 marks)

- (d) State the configuration commands requires for the switch to accommodate the services in Q5(c);

- (i) Commands for switching to exec configurations mode.
- (ii) Selecting the fast ethernet 0 on port 0
- (iii) Assigning IP address on the port; choose 192.168.20.1 and 255.255.255.0 netmask
- (iv) Assigning pool name; choose IP20 for the pool name
- (v) Assigning IP address pool; choose 192.168.10.0 and 255.255.255.0 netmask

(5 marks)

- END OF QUESTIONS -