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UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER II
SESSION 2014/2015**

COURSE NAME : HIGH SPEED NETWORK
COURSE CODE : BIT 32903
PROGRAMME : 3 BIT
EXAMINATION DATE : JUNE 2015 / JULY 2015
DURATION : 3 HOURS
INSTRUCTION : ANSWER ALL QUESTIONS

THIS QUESTION PAPER CONSISTS OF SIX (6) PAGES

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- Q1** (a) Two common LAN technology are Ethernet and Token Ring.
- (i) Compare the access methods used in Ethernet and Token Ring.
(6 marks)
 - (ii) 100BaseVG-AnyLAN is a fast Ethernet that abandons the access method commonly used in Ethernet 100BaseT. Provide **TWO(2)** reasons why would one is better than the other.
(4 marks)
- (b) The American National Standard Institute (ANSI) introduced FDDI LANs as ANSI standard X3T9.5. With appropriate diagram, demonstrate **TWO(2)** significant features of FDDI access method over regular token ring.
(8 marks)
- (c) Specify and justify suitable transmission media for the following case studies:
- (i) A college main campus is separated by just 1 km from its new campus. Between the 2 campuses are factories and residential homes.
(3 marks)
 - (ii) A gas station in an Island, 150 km offshores.
(2 marks)
 - (iii) A network near an electrical generator.
(2 marks)
- Q2** (a) Gigabit Ethernet is currently the most accepted network technology for many organizations. Provide **FOUR (4)** reasons why it is the most logical choice for most organizations.
(8 marks)
- (b) Consider the following case study:
- A small branch with 20 computers, 15 notebooks and a database server is to be setup at Parit Raja. This branch is to be connected 24 hours to its headquarters in Penang, which has 2000 computers.
- Specify and justify which LAN and WAN network technology are more appropriate for this new company.
(8 marks)

- (c) Current WIFI technology is fast and great for access in public areas.
- (i) Provide **TWO(2)** reasons why would installing a WIFI network in a tree-densely garden and crowded area such as train exchange stations poses some challenges. (6 marks)
- (ii) For such cases in **Q2(c)(i)**, where would you propose the best place for WIFI access points installation? (3 marks)

Q3 (a) Given **Figure Q3(a)**:

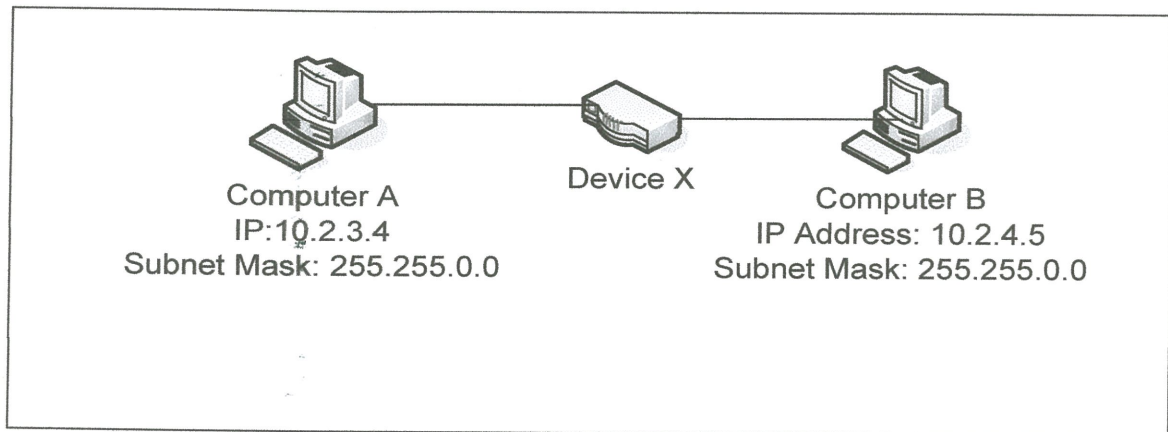


FIGURE Q3(a)

If we put a switch between Computer A and B, will the computers be able to send and-receive messages? Show all your works.

(5 marks)

(b) Consider the following case study:

A stack of packet switches in a LAN has 120 users, each user offering packets at an average rate of 10 pps. The average length of the packets is 1024 bits. Only 50% of this packet goes to a 56-kbps WAN circuit.

- (i) Calculate the load, utilization and queuing depth for both within the LAN and also on the WAN circuit.

(6 marks)

- (ii) Based on **Q3(b)(i)**, would you recommend an upgrade or not to the WAN circuit? State your reasoning and propose the appropriate WAN connection speed.

(6 marks)

- (c) Given the following **TWO (2)** case studies:

Case A: University of Royal Parit, Senggarang has 5 big buildings all separated roughly 300 meters from each other. Each building has 500 computers. They have also purchased a leased line service to provide Internet access to their students.

Case B: Joomlah and his wife Noolah are moving to their newly purchased home at Taman Banang, Air Hitam. They have subscribed to UNIFY broadband to receive Internet services. With a total 5 kids all having their own tablets, Joomlah has decided to share the high speed broadband access between members of his family.

Propose a suitable highspeed Internet **WAN redundant topology** (state your reasoning to support your choice).

(8 marks)

Q4 Given the following scenario for a company Museum Manage Sdn Bhd:

Headquarters: Melaka

No.	Department	Number of network node required
1.	Main Office Access	77
2.	Operation	14
3.	Museum IP Cameras	131

Branch #1: Batu Pahat (western Johor)

No.	Department	Number of network node required
1.	Software Development	33
2.	R&D	12

Branch #2: Gemas (northern Johor)

No.	Department	Number of network node required
1.	Training	62

Several legal IPs have been purchased from Jaring - 200.1.1.0, 200.1.2.0, 200.1.3.0 each with default subnet mask 255.255.255.0. They will need a DNS server, an email server and a web server. Due to company policy, all nodes will be accessing the Internet using these legal IP, no internal IP addressing is allowed.

- (a) Draw a network diagram for Museum Manage Sdn Bhd. (4 marks)

- (b) Calculate how many subnets are needed in Museum Manage Sdn Bhd (list all of these subnets). (3 marks)

- (c) 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)

(d) Generate configurations for the following device:

(i) routers (2 marks)

(ii) servers (2 marks)

(iii) one(1) PC from each department. (2 marks)

-END OF QUESTION-

