UTHM
Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER II
SESSION 2015/2016

COURSE NAME	:	BROADBAND COMMUNICATION SYSTEMS
COURSE CODE	:	BNF 41003
PROGRAMME	:	BNF
EXAMINATION DATE	:	JUNE / JULY 2016
DURATION	:	2 HOURS AND 30 MINUTES
INSTRUCTION	:	ANSWER **ALL** QUESTIONS

THIS QUESTION PAPER CONSISTS OF **FOUR (4)** PAGES

Q1   (a)   There are a few types of application architectures. List **ONE (1)** example of application architectures instead of client to server and peer to peer. List **TWO (2)** examples and describe the characteristics for the application architecture that you have stated.

(5 marks)

(b)   Skype is a proprietary VoIP system using its own protocol based on peer-to-peer (P2P) networking. Explain how Skype works.

(4 marks)

(c)   There are a few transport services available for application layer. Outline **THREE (3)** transport services that an application layer needed.

(6 marks)

(d)   Outline the **FIVE (5)** layers of TCP/IP protocol suite. Give **ONE (1)** protocol example for each layer.

(5 marks)

Q2   (a)   Differentiate between intranet and internet and give **THREE (3)** disadvantages of intranet.

(8 marks)

(b)   A web page of 70 Mbytes is being retrieved from a web server. The distance between the host and the web server is 250 km through a ISDN connection with a bit rate of 2.5 Mbps. Assuming that the signal propagation velocity is 2×10^8 m/s. Solve:

(i)   The propagation delay, T_P
(ii)   The total transfer time (delays within the host, server and routers are negligible)

(5 marks)

(c)   Compute the maximum block size for a channel with a mean BER probability of 10^{-5} if the probability of a block containing error is 10^{-1}.

(3 marks)

(d)   Give **TWO (2)** comparison between IPv6 and IPv4.

(4 marks)

Q3 (a) Differentiate between datagram and virtual circuit packet switching techniques.

(4 marks)

(b) Define X.25 technology in network layer.

(2 marks)

(c) Frame relay is designed to provide a more efficient transmission scheme than X.25. Describe **TWO (2)** advantages of frame relay.

(4 marks)

(d) Give **THREE (3)** differentiation between frame relay and a conventional X.25 packet switching service.

(6 marks)

(e) Describe the function of a control plane and a user plane in frame relay protocol architecture.

(4 marks)

Q4 (a) Define the function of backend networks.

(2 marks)

(b) Illustrate the differences between server-based storage and storage area network.

(4 marks)

(c) List **THREE (3)** transmission medium for Local Area Network (LAN).

(3 marks)

(d) In IEEE 802 reference model, data link layer are divided by two control layer. Outline the **TWO (2)** control layer.

(2 marks)

(e) Describe in detail **THREE (3)** services provided as alternatives for attached devices using Logical Link Control (LLC).

(6 marks)

(f) Describe the function of bridges in LAN.

(3 marks)

Q5 (a) Outline **FOUR (4)** most important requirement for Wireless LAN in a specific environment.

(8 marks)

(b) The 802.11 working group considered two types of access proposals for a MAC algorithm. Describe the **TWO (2)** access protocol.

(4 marks)

(c) List **THREE (3)** physical media which are defined in the original 802.11 standard.

(3 marks)

(d) Define the frequency range of IEEE 802.11a and IEEE 802.11g.

(2 marks)

(e) List **THREE (3)** security standard / algorithm in wireless LAN 802.11

(3 marks)

- **END OF QUESTION -**