



U MAP

UNIVERSITI MALAYSIA PERLIS

School of Computer and Communications Engineering
DPT224 Data Communications and Networking

Test 1

Date: January 2020

Duration: 1 hour 30 minutes

Question 1:

[Soalan 1]

- a) What is the meaning of the term **Network**. State and explain **three(3)** elements of network criteria.
*[Apakah maksud untuk terma **Rangkaian**. Beri dan terangkan tiga(3) elemen kriteria rangkaian].*
[8 Marks/Markah]
- b) There are four types of physical network topology which is mesh, star, bus and ring. For each of the following topology, draw and discuss the consequences if a connection fails.
[Terdapat empat(4) jenis fizikal topologi rangkaian iaitu mesh, star, bus dan ring. Bagi setiap topologi, bincangkan kesan sekiranya sambungan terputus].
- i. **FOUR (4)** devices arranged in a ring topology
[EMPAT(4) alat diatur didalam topologi "ring"]
[3 Mark/Markah]
- ii. **FIVE(5)** devices arranged in a star topology
[LIMA(5) alat diatur didalam topologi "star"]
[3 Mark/Markah]
- iii. A hybrid of a ring backbone with **THREE(3)** mesh network
[3 Mark/Markah]
- c) What is the difference between a port address, a logical address, and a physical address?
[Apakah perbezaan di antara alamat pelabuhan , alamat yang logik, dan alamat fizikal?]
[6 Marks/ Markah]

Question 2:

[Soalan 2]

- a). In Figure 1.1 below, assume that the communication is between a process running at computer A with port address i and a process running at computer D with port address j . Show the contents of packets and frames at the network, data link, and transport layer for each hop.

[Dalam Rajah 1.1 dibawah, anggapkan bahawa komunikasi adalah proses diantara komputer A dengan alamat "port" i dan proses di komputer D dengan alamat "port" j . Tunjukkan kandungan paket dan frame pada lapisan "network", "data link" dan "transport" untuk setiap "hop".]

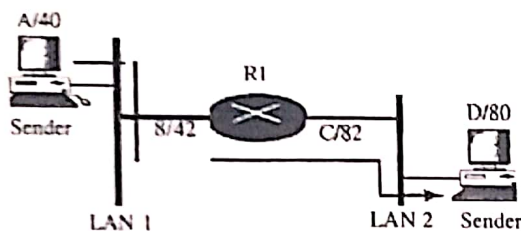


Figure 1.1 [Rajah 1.1]

[8 Marks/Markah]

- b) OSI model is divided into seven layers and each layer has its functionality. Name the layer that perform the following functions:

[OSI model telah dibahagikan kepada tujuh lapisan dan setiap lapisan mempunyai fungsi-fungsinya. Namakan lapisan untuk fungsi-fungsi berikut:]

- i) Route determination
[Penentuan laluan]
- ii) Flow control
[Kawalan arus]
- iii) Interface to transmission media
[Sambungan ke media penghantaran]

[3 Marks/Markah]

- c) We need to use synchronous TDM and combine 20 digital sources, each of 500 Kbps. Each output slot carries 1 bit from each digital source, but one extra bit is added to each frame for synchronization. Answer the following questions:

[Kita perlu menggunakan TDM seragam dan menggabungkan 15 sumber digital, setiap satu daripada 100 Kbps. Setiap slot output membawa 1 bit dari setiap sumber digital, tetapi sedikit tambahan ditambah kepada setiap bingkai untuk penyegerakan. Jawab soalan soalan berikut:]

- i. What is the size of an output frame in bits?
[Apakah saiz bingkai output dalam bit?]

[2 Marks/Markah]

ii. What is the output frame rate?
[Apakah kadar bingkai output?]

[2 Marks/Markah]

iii. What is the duration of an output frame?
[Apakah tempoh bingkai output?]

[2 Marks/Markah]

iv. What is the output data rate?
[Apakah kadar data output?]

[2 Marks/Markah]

v. What is the efficiency of the system (ratio of useful bits to the total bits).
[Apakah kecekapan sistem (nisbah bit berguna kepada jumlah bit)]

[2 Marks/Markah]