

Cork Institute of Technology
Bachelor of Science in Computing in
Information Technology Support – Award

(KITSU_7_Y3)

Autumn 2008

Computer Networks

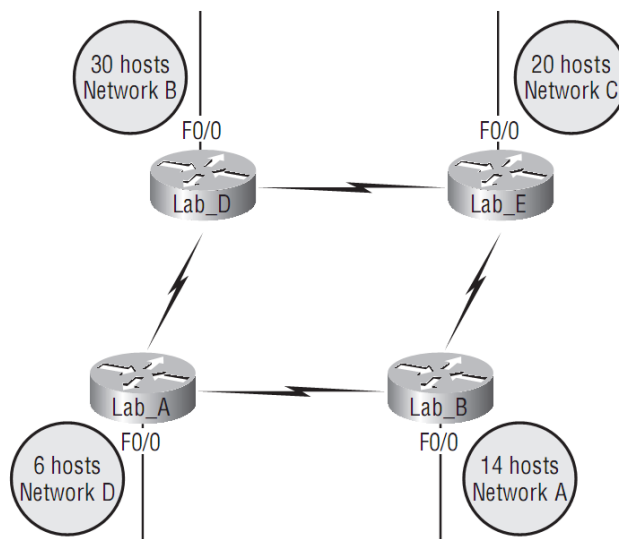
(Time: 3 Hours)

Answer any **FOUR** questions
All questions carry equal marks

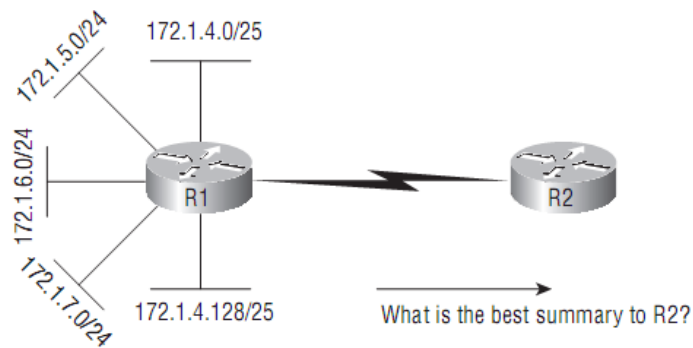
Examiners: Mr. T. Horgan
Mr. J. Greenslade
Mr. J. Walsh

Question 1 – Advanced IP

- a) An organisation wishes to use network address 192.168.10.0/24 to build the following network configuration. Create an efficient subnet arrangement for this company. Give reasons for each address block allocation. (15)



b) There are five networks connected to router R1. What's the best summary address to R2?



(5)

c) Write an access list that will block all hosts in the network range from 192.168.160.0 to 192.168.191.0.

(5)

Question 2 – Network Applications

a) Describe in detail using an example, how a host in CIT resolves the name www.yahoo.co.uk.

(15)

b) Using a diagram describe the DNS hierarchy.

(5)

c) Write a brief note about IMAP (Internet Message Access Protocol).

(5)

Question 3 – OSPF

a) Describe step by step in the operation of the OSPF routing protocol. What is the purpose of the Hello protocol dead interval?

(15)

b) On multi-access broadcast links, a DR and BDR need to be elected. Why is this necessary? How are the DR and BDR selected?

(5)

c) List the advantages that Link-State Routing Protocols have over the traditional distance vector algorithms, such as Routing Information Protocol (RIP).

(5)

Question 4 – Security

a) Discuss security under the following headings: (i) structured and unstructured threats and (ii) internal and external threats.

(15)

b) Describe the following techniques and suggest ways of stopping these attacks: Sniffers, Ping Sweeps, Port Sweeps, Evasive Sweeps, OS Identification

(5)

c) Describe an attack that exploits the TCP protocol three-way handshake.

(5)

Question 5 – Frame Relay

- a) Describe in detail the function and operation of the Local Management Interface. Also list the three different types of LMI message formats and describe when they should be used. (15)
- b) There are three virtual circuit design strategies for a Frame Relay cloud. Explain what these are and the advantages and disadvantages associated with each. (5)
- c) When connecting a router to a Frame Relay network with multiple destinations, split-horizon issues can occur. Explain why this is and the two methods you could use to fix these issues. (5)

Question 6 – PPP

- a) Write about each of the following Link Control Protocol (LCP) Configuration Options: (i) Authentication, (ii) Compression, (iii) Error detection, (iv) Multilink, (v) PPP callback (15)
- b) How does Challenge Handshake Authentication Protocol (CHAP) work? How does CHAP differ from Password Authentication Protocol (PAP)? (5)
- c) Describe each of the **five** states of a PPP connection. (5)