

Ollscoil na hÉireann, Gaillimh
National University of Ireland, Galway
Semester I Examinations 2005 / 2006

Exam Code(s) 3BS9, 3CS1, 3CS2, 1EM1

Exam(s) 1

Module Code(s) CT351

Module(s) Networking

Paper No. 1

Repeat Paper

External Examiner(s) Professor S. McClean

Internal Examiner(s) Dr Michael Madden
Caoimhin O'Nuallain

Instructions: 6 questions ANSWER 4

Duration 2 hours

No. of Pages

Department(s)

Course Co-ordinator(s)

Requirements:

MCQ -

Handout -

Statistical Tables -

Graph Paper -

Log Graph Paper -

Other Material -

- Q1. (a) (1) Outline 3 characteristics of a computer network protocol (6)
 (2) Describe what protocol data units are (PDU) and their role in the operation of the OSI model. (10)
 (b) (1) Define what is meant by a computer network (3)
 (2) Using a simple Block Diagram, show how an analogue signal can be used to transmit digital data. (6)
- Q2 (a) Describe the OSI multi layer model describing each layer, the hardware associated at relevant layers. (10)
 (b) Critique this model with the TCPIP model. (9)
 (c) Describe the need for standards and the OSI body. (6)
- Q3 (a) Describe the main topologies, provide diagrams where necessary
 (b) Outline your plan for a suitable topology for the Arts building and explain why.
 (c) Given the network diagram overleaf create a table indicating all the possible routes and find the shortest weighted route from A to U.
- Q 4 (a) You have been commissioned to re kit out the IT department with a new cabling infrastructure. There is a new digital media school on the top floor. What infrastructure decisions would you make when re doing the building. Taking into consideration
 (1) Cost
 (2) Throughput
 (3) Flexibility
 (4) Expandability

There are 100 students in the top floor, 200 in the floor below for under grads
 And there are 250 seats on the bottom floor of which 150 are for undergrads and the rest are for staff.

Describe the bounded or unbounded requirements of your ultimate solution
 Also describe the additional hardware required and why. (15)

- (b) Where a media is used create a table indicating (10)
 1. Optimum distances and max distances possible.
 2. Throughput capacity
 3. Fault tolerance and reliability
 4. Optimum cost to solve the network infrastructure problems

- Q5 Describe briefly using diagrams 4 of the following
 (a) Data Transmission Impairment (5)
 (b) Guided Transmission Media (5)
 (c) Data Link Layer components (5)
 (d) 10Base T (5)
 (e) Compare when OSPF to RIP and when to use one over the other (5)

Q6 Your client requires you to configure the LabB router that will be used in the network topology show below. At present the router is not configured at all. You are required to use the HyperTerminal utility to configure the router.

The following information is provided to you in order to configure the router:

Router Name:	LabB
Router Type:	2503
E0:	219.17.100.1
S0:	199.6.13.1
S1:	201.100.11.2
Subnet Mask:	255.255.255.0
Protocol:	RIP

You are also required to:

- Provide a welcome message that users will see when they access the router
- Provide a description for each interface

Clearly state the routing commands that will be needed to configure the router.

You must indicate the appropriate level of access for each routing command using the correct prompt notation (Eg: LabB>, LabB#, LabB(config)# etc.)

(25)