

# INSTITUTE OF TECHNOLOGY

## BLANCHARDSTOWN

<b>Year</b>	Year 3
<b>Semester</b>	January, Semester 1
<b>Date of Examination</b>	Monday 14 <sup>th</sup> Jan 2013
<b>Time of Examination</b>	3.30pm – 5.30pm

<b>Prog Code</b>	BN013	<b>Prog Title</b>	Bachelor of Science in Computing in Information Technology	<b>Module Code</b>	COMP H3028
<b>Prog Code</b>	BN302	<b>Prog Title</b>	Bachelor of Science in Computing in Information Technology	<b>Module Code</b>	COMP H3028
<b>Prog Code</b>	BN104	<b>Prog Title</b>	Bachelor of Science (Honours) in Computing	<b>Module Code</b>	COMP H3028

<b>Module Title</b>	<b>Advanced Switching and Routing</b>
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**Internal Examiner(s):** Michael O'Donnell  
**External Examiner(s):** Michael Barrett  
 Dr. Tom Lunney

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### Instructions to candidates:

- 1) Attempt **ALL PARTS** of Question 1 and any **TWO** other questions
- 2) Question 1 is worth 40 marks and all other questions are worth 30 marks each.

**DO NOT TURN OVER THIS PAGE UNTIL YOU ARE TOLD TO DO SO**

### Question 1 (Mandatory)

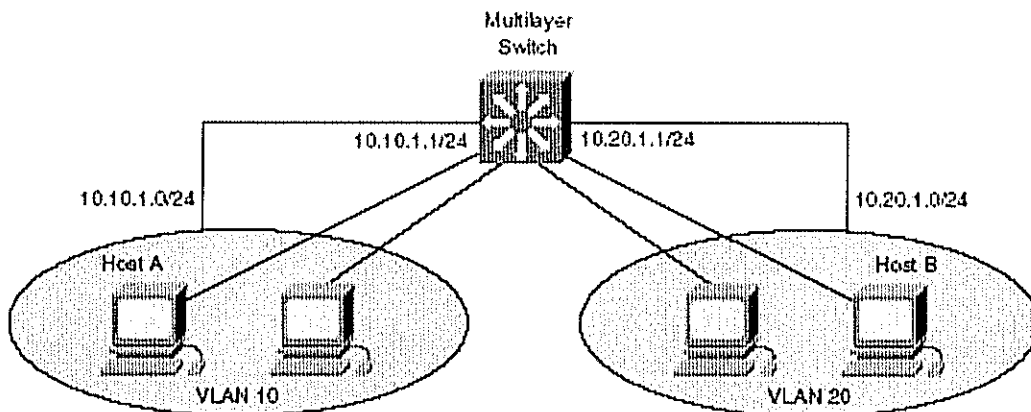
- (a) List **two** common problems in the configuration of Inter-VLAN Routing and indicate how they might be resolved.

(8 marks)

- (b) Outline the main **disadvantages** associated with route redistribution of Interior Gateway Protocols.

(8 marks)

- (c) Configure the Switched Virtual Interfaces (SVIs) for the topology below.



(8 marks)

- (d) The **two** main components of CEF-Based Multi-Layer Switching are the Forwarding Information Base (FIB) and the Adjacency Table (AT).

Briefly describe the functions of **either** the FIB or the AT.

(8 marks)

- (e) Describe a situation where the use of Virtual Links in an OSPF environment would be necessary and use a diagram to illustrate your answer.

(8 marks)

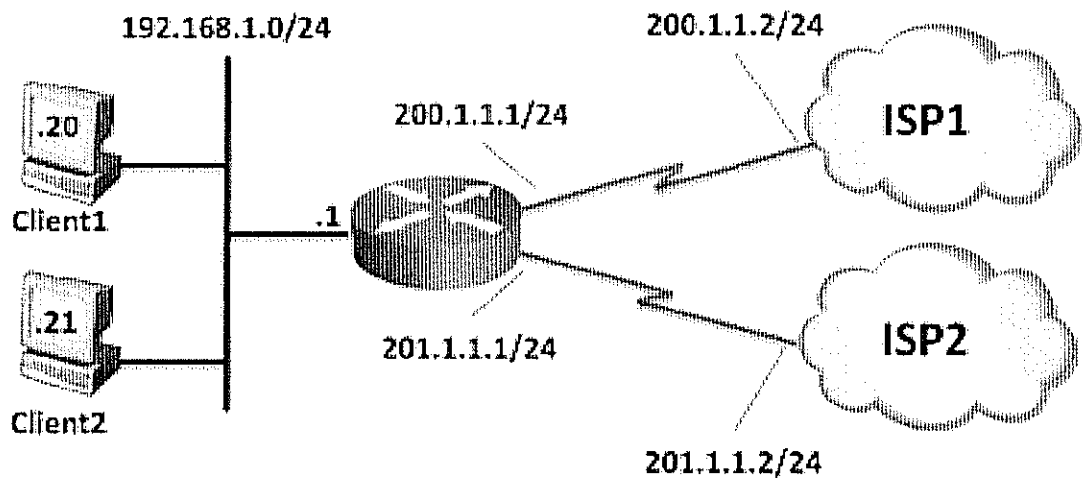
## **Question 2**

- (a) Using a Flow Chart, or otherwise, describe how Policy Based Routing (PBR) treats an incoming packet on a router interface.

(12 marks)

- (b) Your organisation is implementing a dual ISP setup which needs to be tightly controlled. The topology is shown below.

You need to implement the objectives described below using PBR using the diagram below.

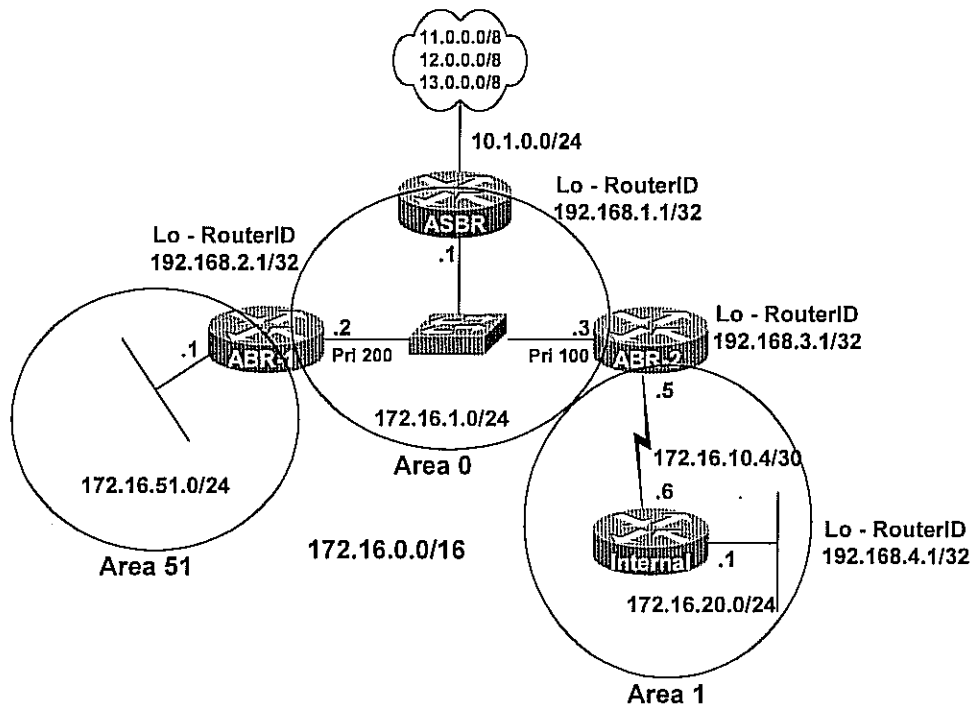


### **Objectives**

- Client1 surfs the Internet all day doing nothing productive. All traffic from this client should be routed through ISP2 which is a slower Internet connection. If ISP1 is down, Client1 should not be able to access the Internet.
- Client2 handles important traffic. Both Telnet and HTTPS should route towards ISP1, which is the more reliable connection. All other traffic from Client2 should route out ISP2.
- Traffic from all other clients should route out ISP2.

(18 marks)

### Question 3



Referring to the diagram above, describe the operation of OSPF under the following headings:

- (a) Link State Advertisements – include in your answer reference to the five types of LSAs.

(20 marks)

- (b) Describe the effects of making Area 1 a Stub Area.

(5 marks)

- (c) In what type of situation could Area 1 be made into a Not So Stubby Area (NSSA)?

(5 marks)

#### **Question 4**

- (a) Outline the situations where it is **not** recommended to use BGP within an Autonomous System.

**(6 marks)**

- (b) Describe the **four** message types that are used in the configuration of BGP.

**(12 marks)**

- (c) Describe the operation of the **three** well-known mandatory attributes: ORIGIN, AS\_PATH and NEXT\_HOP as used in the route selection BGP decision process.

**(12 marks)**