

**INSTITUTE OF TECHNOLOGY  
BLANCHARDSTOWN**

<b>Year</b>	Year 3
<b>Semester</b>	Semester 1
<b>Date of Examination</b>	Monday 10 January 2011
<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 H3021
<b>Prog Code</b>	BN302	<b>Prog Title</b>	Bachelor of Science in Computing in Information Technology	<b>Module Code</b>	COMP H3021
<b>Prog Code</b>	BN104	<b>Prog Title</b>	Bachelor of Science (Honours) in Computing	<b>Module Code</b>	COMP H3021

<b>Module Title</b>	Advanced Switching and Routing
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**Internal Examiner(s):** Michael O'Donnell  
**External Examiner(s):** Dr. Richard Studdert,  
Mr. John Dunnion

**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) Describe the operation of the VLAN Trunking Protocol (VTP) in a switched network environment.

**(8 marks)**

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

**(8 marks)**

- (c) Private VLANs support both Primary and Secondary VLANs. Outline the main characteristics of both types of VLAN.

**(8 marks)**

- (d) Outline two options that address the Non Broadcast Multiaccess (NBMA) limitations in the configuration of the OSPF protocol.

**(8 marks)**

- (e) Describe the 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) Briefly describe Switch Virtual Interfaces (SVIs) as used in Multi-Layer switches.

**(6 marks)**

- (b) Give an overview of the Cisco Express Forwarding (CEF) technology as used in Multi-Layer switches under the following headings:

- (i) Forward Information Base (FIB)
- (ii) Adjacency Tables

**(12 marks)**

- (c) With the aid of a diagram, describe how Host A sends packets to Host B on a different network. Make reference to ARP Throttling and Packet Rewrite in your answer.

**(12 marks)**

## **Question 3**

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

**(6 marks)**

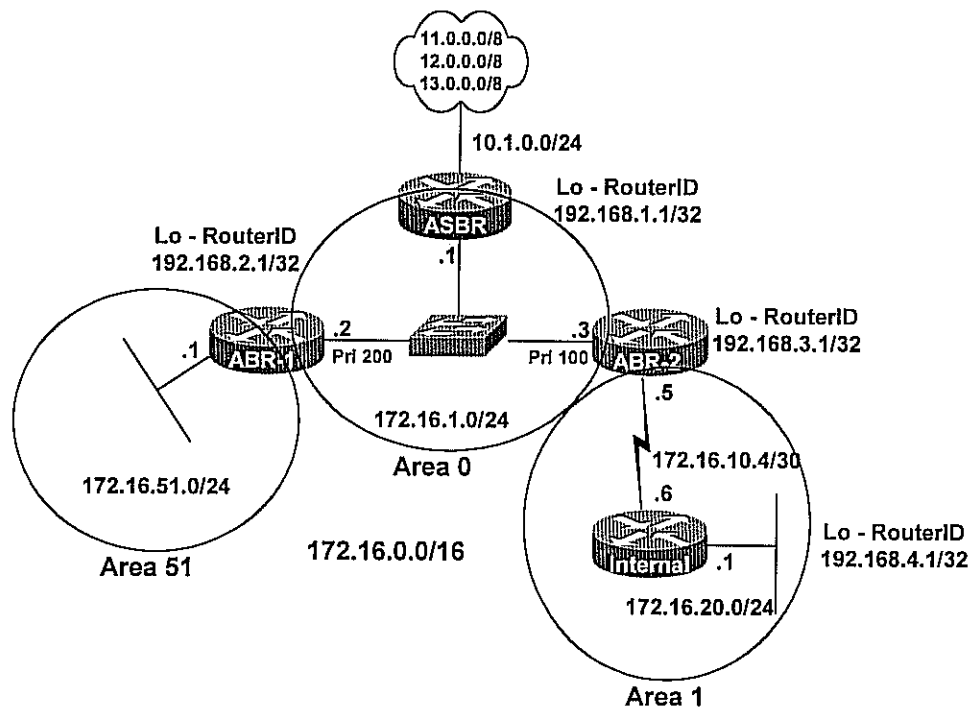
- (b) Describe the four message types that are used in the configuration of BGP.

**(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)**

## Question 4



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

- Link State Advertisements – include in your answer reference to the five types of LSAs.  
(20 marks)
- Describe the effect of making Area 1 a Stub Area.  
(5 marks)
- In what type of situation could Area 1 be made into a Not So Stubby Area (NSSA)?  
(5 marks)