INSTITUTE OF TECHNOLOGY

BLANCHARDSTOWN

Year	Year 3
Semester	Semester 1
Date of Examination	Monday 15th August 2011
Time of Examination	10.00am – 12.00pm

Prog Code	BN013	**Prog Title**	Bachelor of Science in Computing in Information Technology	**Module Code**	COMP H3021
Prog Code	BN302	**Prog Title**	Bachelor of Science in Computing in Information Technology	**Module Code**	COMP H3021
Prog Code	BN104	**Prog Title**	Bachelor of Science (Honours) in Computing	**Module Code**	COMP H3021

Module Title	Repeat Advanced Switching and Routing

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 situations where the route redistribution of Interior Gateway Protocols would be appropriate.

(8 marks)

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

(8 marks)

(d) Explain how the Point-to-Multipoint configuration in OSPF addresses the issues attached to the use of Non Broadcast Multiaccess (NBMA) networks.

(8 marks)

(e) Explain, with the aid of a diagram, how OSPF uses Route Summarisation to reduce the size of routing tables.

(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 the Border Gateway Protocol (BGP) within an Autonomous System.

(5 marks)

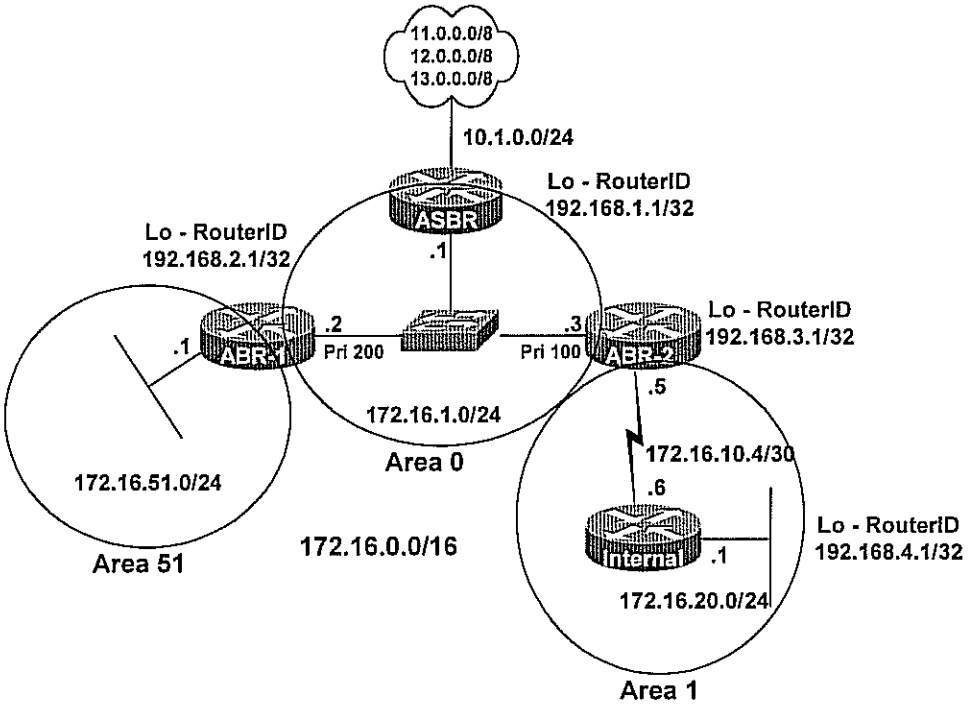
(b) Explain how EBGP neighbours not directly connected can establish an EBGP session.

(5 marks)

(c) Outline the **ten-step** process by which BGP uses attribute values in choosing the best route when faced with multiple routes to the same destination. You may use a flow chart instead to illustrate your answer.

(20 marks)

Question 4



Refer to the diagram above to answer the following questions:

(a) The **show ip ospf database** command is issued on the **Internal** router. Complete the table for LSA 1 – Router Link States by listing the Link ID and ADV Routers in the resulting output.

(4 marks)

(b) Repeat part **(a)** above but this time give the resulting output for the **ABR-2** router.

(2 marks)

(c) On which router or routers would you expect an output for LSA 2 – Network Link States after issuing the command **show ip ospf database.**

(4 marks)

Question 4 continued on next page

Question 4 continued from previous page

(d) The **show ip ospf database** command is issued on the **ASBR** router. Complete the table for LSA 3 – Summary Net Link States by listing the Link ID and ADV Routers in the resulting output.

(4 marks)

(e) The **show ip ospf database** command is issued on the **ABR-2** router. Complete the table for LSA 4 – ASBR Summary Link States by listing the Link ID and ADV Routers in the resulting output.

(4 marks)

(f) The **show ip ospf database** command is issued on the **ABR-2** router. Complete the table for LSA 5 – AS External Link States by listing the Link ID and ADV Routers in the resulting output.

(4 marks)

(g) Describe the effect of making Area 1 a Stub Area.

(4 marks)

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

(4 marks)