INSTITUTE OF TECHNOLOGY

BLANCHARDSTOWN

Year	Year 3
Semester	Repeat, Semester 1
Date of Examination	
Time of Examination	

Prog Code	BN013	**Prog Title**	Bachelor of Science in Computing in Information Technology	**Module Code**	COMP H3028
Prog Code	BN302	**Prog Title**	Bachelor of Science in Computing in Information Technology	**Module Code**	COMP H3028
Prog Code	BN104	**Prog Title**	Bachelor of Science (Honours) in Computing	**Module Code**	COMP H3028

Module Title	Advanced Switching and Routing

Internal Examiner(s): **Michael O'Donnell**
External Examiner(s): **Dr. Richard Studdert**

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 main benefits of using EtherChannel in LAN switch-to-switch implementations.

(8 marks)

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

(8 marks)

(c) Briefly describe Switch Virtual Interfaces (SVIs) as used in Multi-Layer switches. Include in your answer how they are configured.

(8 marks)

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

Briefly describe the functions of both the FIB and the AT.

(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.

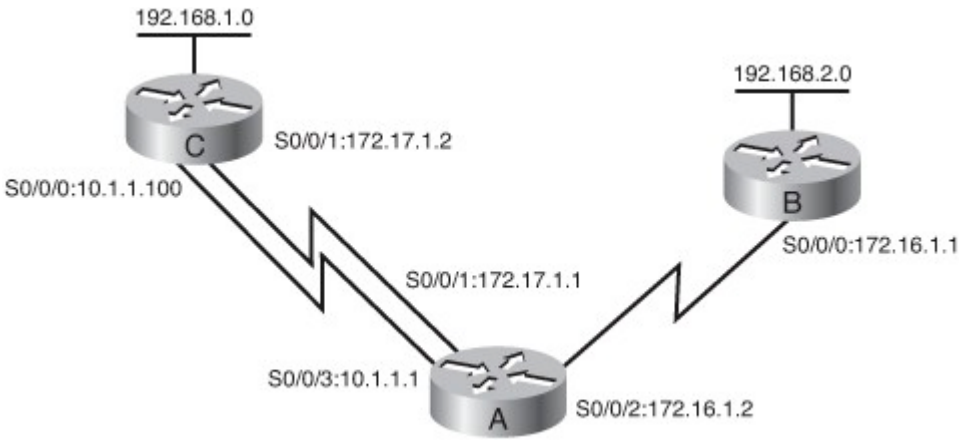
(8 marks)

Question 2

(a) What are the main benefits of Policy Based Routing (PBR) to an organization?

(8 marks)

(b) In the topology below, Router A has a policy that packets with a source address of 192.168.2.1 should go out to Router C's interface Serial 0/0/1, 172.17.1.2 (via Router A's S0/0/1 interface). All other packets should be routed according to their destination address.



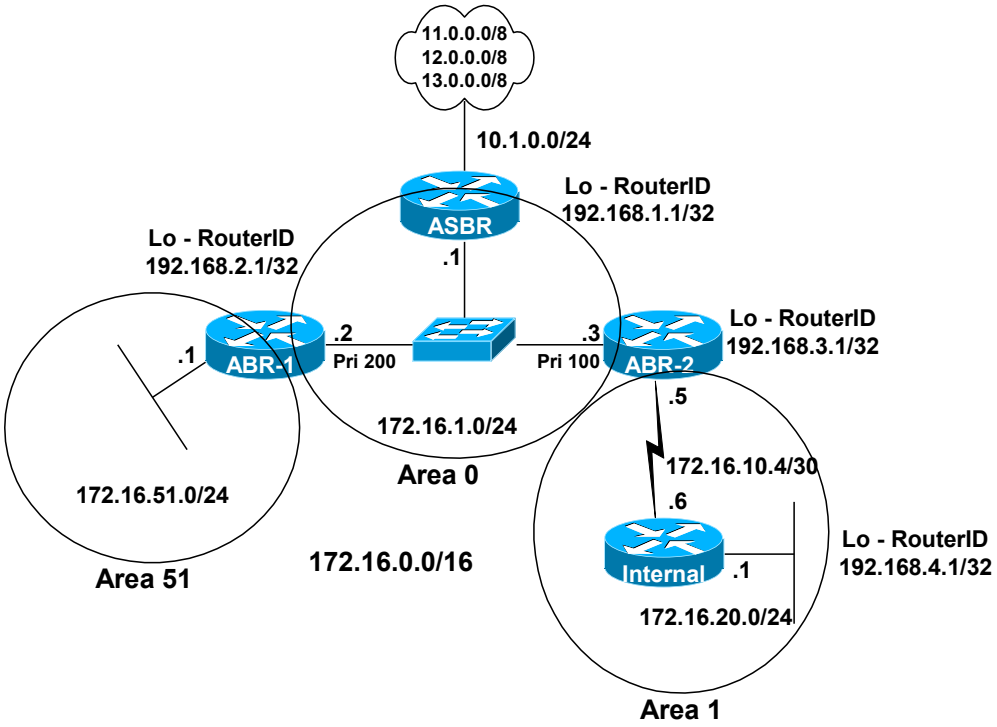
What configuration should be placed on Router A to achieve the above scenario?

(8 marks)

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

(14 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)