INSTITUTE OF TECHNOLOGY BLANCHARDSTOWN

Academic Term	2013-14
Year of Study	3
Semester	Semester One – Repeat Paper
Date of Examination	Monday 18 August 2014
Time of Examination	10:00am – 12:00pm

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

Module Title	**Repeat Paper - Advanced Switching and Routing**

Internal Examiner(s)	Michael O'Donnell
External Examiner(s)	Dr. Tom Lunney, Mr. Michael Barrett

Instructions to candidates:

1.	**To ensure that you take the correct examination, please check the module and programme which you are following is listed in the table above.**
2.	**Attempt ALL PARTS of Question 1 and any TWO other questions**
3.	**Question 1 is worth 40 marks and all other questions are worth 30 marks each.**

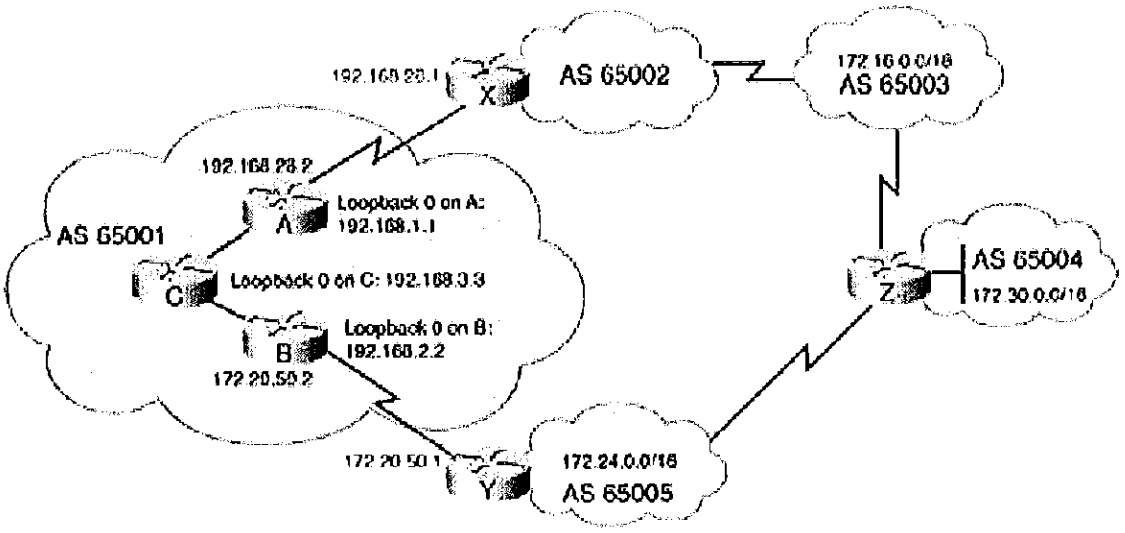
DO NOT TURN OVER THIS PAGE UNTIL YOU ARE TOLD TO DO SO

Question 1 (Mandatory)

(a) Outline the main benefits of using EtherChannel in LAN switch-to-switch implementations.

(8 marks)

(b)



In the topology above, Routers A, B and C are running IBGP between them and Router A and Router B is running eBGP with all of the other autonomous systems. Assume also that Routers A, B and C are using their Loopback addresses to form neighbour relationships with each other.

Assuming that Router C **cannot** reach the next hop address of 192.168.29.1 on Router X and next hop of 172.20.50.1 on Router Y, what extra configuration is needed to solve this problem?

(8 marks)

(c) Outline the main situations where the route redistribution of Interior Gateway Protocols would be appropriate.

(8 marks)

(d) List <u>two</u> common problems in the configuration of Inter-VLAN Routing and indicate how they might be resolved.

(8 marks)

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

(8 marks)

<u>Total: 40 marks</u>

Answer any two questions from Questions 2, 3 and 4.

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 Multilayer switches under the following headings:

(i) Forward Information Base (FIB)

(ii) Adjacency Tables

(12 marks)

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

(12 marks)

Total: 30 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)

Total: 30 marks

Question 4

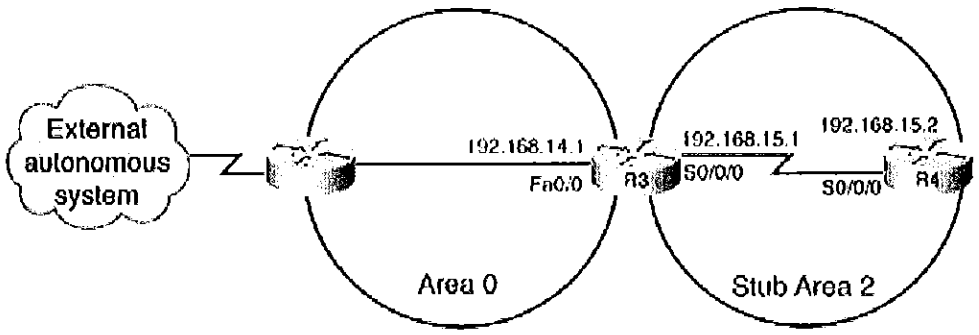
(a) OSPF uses **six** types of Link State Advertisements (LSAs) to describe the topology of an OSPF Area or network.

Describe the main characteristics of each of these **six** types.

(18 marks)

(b)

(i) Describe the effects of making Area 2 a Stub Area in the topology below.



(6 marks)

(ii) In what type of situation could Area 2 be made into a Not So Stubby Area (NSSA)?

(6 marks)

Total: 30 marks