

INSTITUTE OF TECHNOLOGY BLANCHARDSTOWN

Academic Term	2013-14
Year of Study	3
Semester	Semester One
Date of Examination	Monday 13 th January 2014
Time of Examination	9.30am – 11.30am

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	Advanced Switching and Routing
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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)

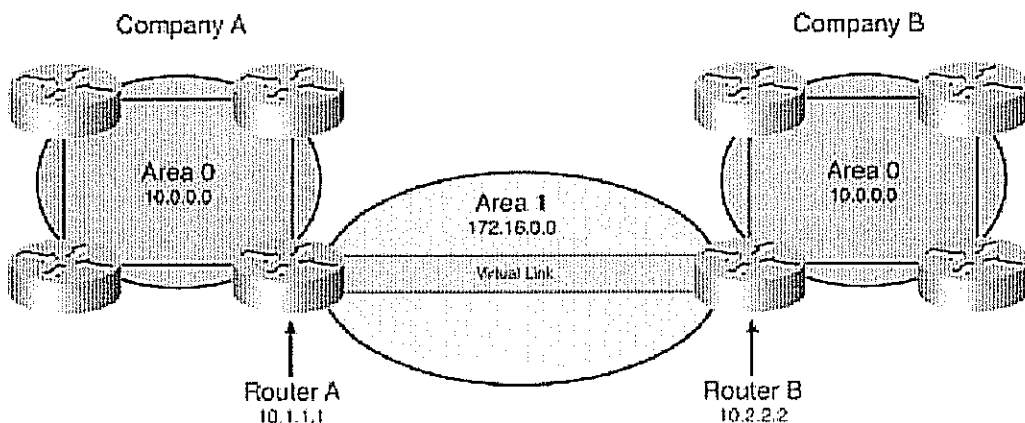
- (a) Describe the operation of the VLAN Trunking Protocol (VTP) in a switched network environment.

(8 marks)

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

(8 marks)

(c)



In the topology above, Area 0 is discontinuous. A virtual link is used as a backup strategy to temporarily connect Area 0. Area 1 is used as the transit area. Router A builds a virtual link to Router B, and Router B builds a virtual link to the Router A.

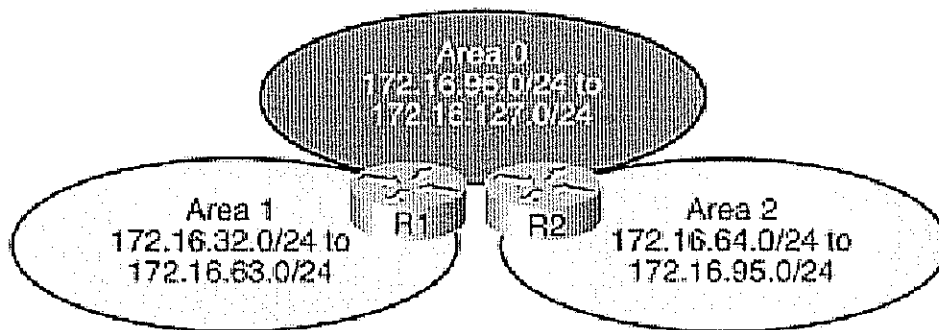
What configuration is needed on Router A to allow this to happen?

(8 marks)

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

(8 marks)

(e)



What configuration on R1 is needed to configure OSPF and summarise the networks in both Area 0 and Area 1 in the topology above.

(8 marks)

Total: 40 marks

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 BGP within an Autonomous System.

(6 marks)

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

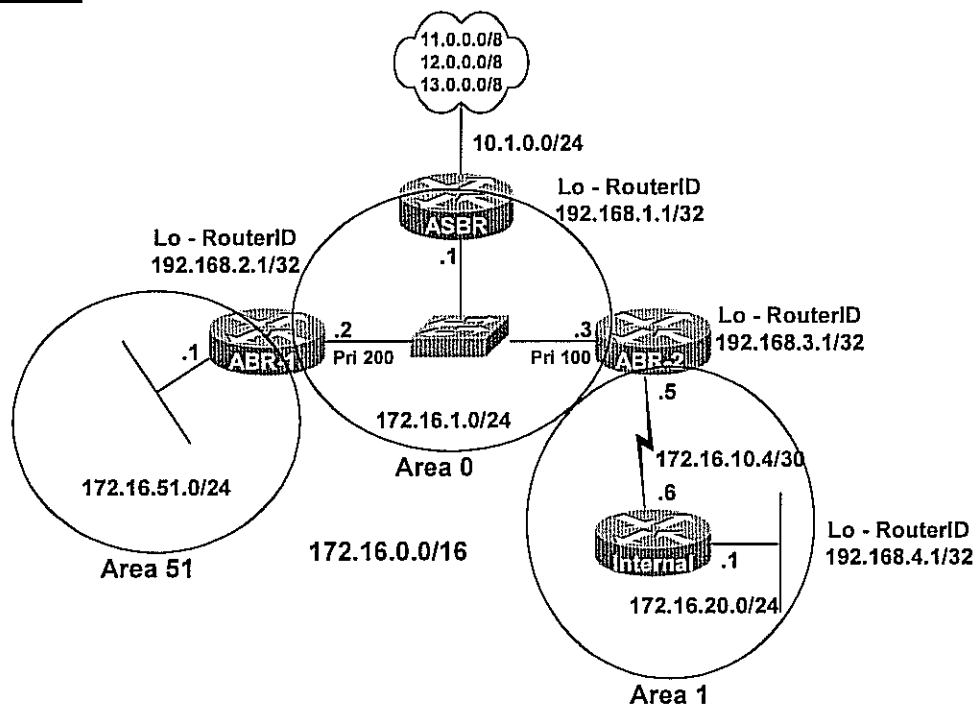
(12 marks)

- (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)

Total: 30 marks

Question 4



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

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

(20 marks)

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

(5 marks)

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

(5 marks)

Total: 30 marks