TECHNOLOGICAL UNIVERSITY DUBLIN
Grangegorman

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TU857 BSc. (Honours) Degree in Computer Science (Infrastructure)

Year 1

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SEMESTER 1 EXAMINATIONS 2022/23

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CMPU 2014 Networking 2

Internal Examiner(s):
Ms Jane Ferris
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External Examiner(s):
Dr Charles Markham

Instructions To Candidates:

ANSWER *QUESTION ONE* & <u>TWO</u> OTHER QUESTIONS.

QUESTION ONE IS <u>*COMPULSORY*</u> & CARRIES 50 MARKS.

ALL OTHER QUESTIONS CARRY 25 MARKS

Exam Duration:

Two Hours

Special Instructions /Handouts/ Materials Required:

None

Question One- *This question is **compulsory** and **all sections are 5 marks.***

a) At what layer of the OSI model is a Switch positioned?
What is the data envelope for this layer?

b) Explain the difference between a broadcast and collision domain in relation to a network.

c)

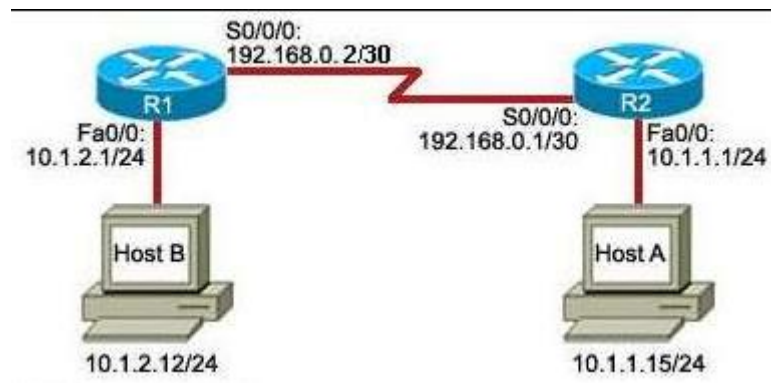*Figure Q1.*

Host A: 10.1.1.15/24   Host B: 10.1.2.12/24
R2:   R1:
Fa0/0 10.1.1.1/24   Fa0/0 10.1.2.1/24
S0/0/0 192.168.0.1/30   S0/0/0 192.168.0.2/30

With reference to figure 1. Identify the *default gateway* for the host *B*.

d) Identify or describe three benefits of using Virtual Local Area Networks.

e) A network administrator configures the router with the following command.
```
ip static route 10.1.2.0 255.255.255.0 s0/0/0
```
Write down how the route will appear in the routing table and list any issues that may arise from the use of the command.

f) Expand the acronym *STP, BID and BPDU*.

g) Identify one issue in the following set of commands to configure a password on the communication lines to secure access to the networking device.
```
#line con vty 0 14
#password
#login
```

h) A cisco router issues the following command and receives an error response.
```
#show vlan
```
Identify one issue with the issued command.

i) Expand the following acronyms: DTP and describe the security risk associated with the Cisco proprietary protocol.

j) Expand the following acronyms: CDP and describe the security risk associated with the Cisco proprietary protocol.

(Total 50 marks)

Question Two The Routing Table
Answer all questions in relation to the routing table described in figure Q2.

Output omitted

```
C    10.0.0.0/8 is directly connected, Serial0/0/0
L    10.0.0.1/32 is directly connected, Serial0/0/0
     209.165.200.0/24 is subnetted, 3subnets
R        209.165.200.224/30 [120/1] via 10.0.0.1, 00:00:11, Serial0/0/0
R        209.165.200.228/30 [120/1] via 10.0.0.1, 00:00:11, Serial0/0/0
R        209.165.200.232/30 [120/1] via 10.0.0.1, 00:00:11, Serial0/0/0
S*   0.0.0.0/0 [1/0] via 10.0.0.0, Serial 0/0/0
```

Figure Q2 Routing Table

a) What are three advantages of using *static routes* in a network?
(5 marks)

b) What does the S* moniker mean in the routing table provided in figure 2?
(5 marks)

c) Describe the purpose and identify the values for the administration distance and metric for the routing protocol in figure 2?
(5 marks)

d) The network 10.0.0.1 has a mask of /32. Identify what this route describes and why the specific mask is used.
(5 marks)

e) With reference to the routing table provided in figure 1, what command was issued to receive that specific router feedback.
(5 marks)
(Total 25 marks)

Question Three

a)   Describe briefly the importance of securing the modern switched network.
     In your answer ensure to name and describe two potential security threats
     to the switched network.

                                                                (5 marks)

b)   Identify three methods of mitigating threats to the security of networking
     devices on a modern network.

                                                                (5 marks)

c)   In relation to switches in the network what switch feature is used to restrict the
     number of devices that may communicate on the link?

                                                                (5 marks)

d)   In relation to switches in the network, security violation modes are
     configurable on each port. Name or describe briefly the three violations modes
     available.

                                                                (5 marks)

e)   Describe in your own words the purpose of BPDU Guard and identify what
     the outcome will be if a port configured with BPDU Guard receives a
     BPDU communication

                                                                (5 marks)
                                                            (Total 25 marks)

Question Four

a)   Describe the difference in relation to the tolerance of redundant pathways in layer 2 and layer 3 networks.

(5 marks)

b)   Describe the importance of the First Hop Redundancy Protocols in the management of modern networks.

(5 marks)

c)   Describe the importance of the Spanning Tree Protocol in the management of modern networks.

(5 marks)

d)   Describe the importance of the Link Aggregation Control Protocol in the management of modern networks.

(5 marks)

e)   Does a port aggregation protocol such as Link Aggregation Control Protocol take part in the Spanning Tree Protocol?

(5 marks)
(Total 25 marks)

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