

**Programme Code: TU857**  
**Module Code: CMPU 2014**

**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 2023/24**

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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* & TWO OTHER QUESTIONS.

QUESTION ONE IS COMPULSORY & CARRIES 50 MARKS.

ALL OTHER QUESTIONS CARRY 25 MARKS

**Exam Duration:**

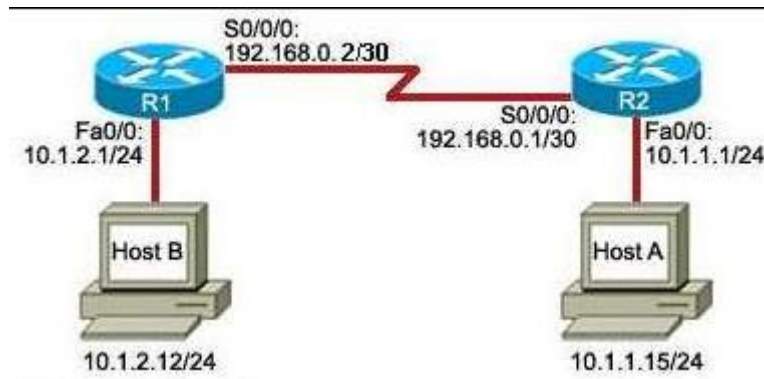
Two Hours

**Special Instructions /Handouts/ Materials Required:**

**None**

### Question One

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



LAN1

Host A: 10.1.1.15/24

R2:

Fa0/0 10.1.1.1/24

S0/0/0 192.168.0.1/30

LAN2

Host B: 10.1.2.12/24

R1:

Fa0/0 10.1.2.1/24

S0/0/0 192.168.0.2/30

Figure 1.

- At what layer of the OSI model is a Router positioned?  
What is the data envelope for this layer?  
(5 marks)
- In relation to the network of Figure 1 above, identify the number of broadcast domains that are in effect.  
(5 marks)
- With reference to Figure 1 above. Identify the default gateway for LAN1.  
(5 marks)
- With reference to Figure 1 above.  
The following command is issued on the networking device and receives an error response. Identify one issue with the issued command:  
`#show vlan`  
(5 marks)
- Identify or describe three benefits of using a static route.  
(5 marks)
- A network administrator configures the router with the following command. Identify how the route will appear in the routing table and list any issues that may arise from the use of the command.  
`#ip route 10.1.2.255 255.255.255.0 s0/0/0`  
(5 marks)
- Expand the acronyms *CDP* and *DTP* and identify the significant security issue associated with both of the Cisco proprietary protocols.  
(5 marks)
- Does a port aggregation protocol such as Link Aggregation Control Protocol (LACP) take part in the STP?  
(5 marks)

**Question One continues on next page...**

### Question One

- i) Identify the specific command that will enable routing on a multi-layer switch. (5 marks)
- j) Identify the three 'A's of network security. (5 marks)
- (Total 50 marks)

### Question Two

Output omitted

```
192.168.10.0/24 is variably subnetted, 2 subnets, 2 masks
C    192.168.10.0/24 is directly connected, GigabitEthernet0/0/0.1
L    192.168.10.1/32 is directly connected, GigabitEthernet0/0/0.1
192.168.20.0/24 is variably subnetted, 2 subnets, 2 masks
C    192.168.20.0/24 is directly connected, GigabitEthernet0/0/0.20
L    192.168.20.1/32 is directly connected, GigabitEthernet0/0/0.20
10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
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, 3 subnets
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 2 Routing Table*

- a) With reference to the routing table provided in figure 2, what command was issued to receive the specific router feedback. (5 marks)
- b) With reference to *Figure 2*, what does the 'S\*' moniker mean in the routing table? (5 marks)
- c) With reference to *Figure 2*, Identify the protocol in effect and name the two protocol variables present in the table. (5 marks)
- d) A network administrator configures the router with the following command. The administrator does not see the route advertised in the table with reference to *Figure 2*, identify any issues with the command:
- ```
#ip route 209.165.200.224 255.255.255.252 s0/0/0 125
```
- (5 marks)
- e) With reference to *Figure 2*, what is the encapsulation method in effect on the gigabit0/0 interface? (5 marks)
- (Total 25 marks)

**Question Three**

- a) Explain the significance and purpose of the Cisco Proprietary HSRP. (5 marks)
  - b) Explain the significance and purpose of the STP. (5 marks)
  - c) Explain the significance and purpose of ARP. (5 marks)
  - d) Explain the significance and purpose of DHCP. (5 marks)
  - e) Explain the significance and purpose of CAPWAP. (5 marks)
- (Total 25 marks)

**Question Four**

- a) Describe briefly a 'MAC attack'. (5 marks)
  - b) Identify three methods of mitigating a 'MAC attack'. (5 marks)
  - c) Describe briefly an attack specific to a VLAN. (5 marks)
  - d) Identify two methods of mitigating a VLAN attack. (5 marks)
  - e) Identify two methods of mitigating a STP manipulation attack. (5 marks)
- (Total 25 marks)