Programme Code: DT211C
Module Code: CMPU 1021
CRN: 22495

TECHNOLOGICAL UNIVERSITY DUBLIN
KEVIN STREET CAMPUS

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

Year 1

SEMESTER 2 EXAMINATIONS 2018/19

Networking Fundamentals

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INSTRUCTIONS TO CANDIDATES

ANSWER **THREE** QUESTIONS OUT OF **FOUR**.

ALL QUESTIONS CARRY EQUAL MARKS.

1 BONUS MARK WILL BE AWARDED TO EACH STUDENT

Special Instructions/Handouts:

NO CALCULATORS PERMITTED IN THIS EXAM

Question 1

a) Fully expand the following IPv6 Addresses
   i.   2001:4860:4860::8888
   ii. 2001:bb6:15c8:ab58:31a0:7dc1:5a1b:bfe2
   iii. 0:d9:ce07::8e:0:0
   iv. 1:2fe9:0:f72b:0:9558:64:86d6

(12 marks)

b) You have a device with a MAC address of 52:74:f2:b1:a8:7f. What will be the automatically generated link-local address? Explain your answer.

(9 marks)

a) IPv6 was introduced to overcome the issues associated with IPv4. Provide and discuss these issues.

(12 marks)

Question 2

a) Explain, with the aid of an example, what the term Data Encapsulation means.

(9 marks)

b) Data Transfer can be measured in 3 ways, Bandwidth, Throughput and Goodput. Provide an explanation for each of these.

(12 marks)

c) The Data Link Layer is often broken into two sublayers. What are these sublayers and explain the role of each of them?

(12 marks)

Question 3

a) Compare and contrast the functions of Hosts, Servers and Clients.

(12 marks)

b) Compare and contrast the difference between a Telnet and SSH connection.

(10 marks)

c) In relation to (Cisco) networking devices, explain the difference between the Running Configuration File and the Startup Configuration File.

(11 marks)

Question 4

a) Convert the following values from binary to decimal (show your workings)
11111101
1000010
10011

(9 marks)

b) Answer the following questions
  I. How many subnets and hosts per subnet can you get from the network 10.0.0.0 255.255.240.0?
  II. Which network does host 172.19.33.120 255.255.255.224 belong to?
  III. What is the first valid host on the network that the node 172.17.47.215 255.255.254.0 belongs to?
  IV. What is the broadcast address of the network 172.27.108.0/24?
  V. What valid host range is the IP address 172.25.170.205/22 a part of?
  VI. Which network does host 192.168.164.54/30 belong to?
  VII. What is the last valid host on the subnetwork 192.168.209.192 255.255.255.192?

(24 marks)