



## COMPUTER ENGINEERING

### Level 4 Diploma

#### UNIT 4 – NETWORKING TECHNOLOGY

##### Question 1

- (a) Analyse the operation of the transport-layer of the OSI model. (6 marks)
- (b) Identify TWO packet sniffing systems. In your answer, discuss what they are for, how each of them operates, and how they are used. (14 marks)

##### Question 2

- (a) Explain the key differences between the stateful and stateless methods of packet inspection. (4 marks)
- (b) Analyse the operation of the network-layer of the OSI model. (6 marks)
- (c) Review how a switch can discover MAC addresses, illustrating how it will store and process the addresses. (10 marks)

##### Question 3

- (a) Briefly discuss how errors and packet collisions are detected and remedied. (4 marks)
- (b) Analyse the different elements of the physical-layer of the OSI model, referring to each of their purposes. (6 marks)
- (c) Compare the differences between full and half-duplex operation, referring to their implications for network capability and performance. (10 marks)

##### Question 4

Discuss, with the aid of diagrams, the key differences between the features of the OSI model and TCP/IP. (20 marks)

##### Question 5

- (a) Describe in detail TWO strategies that have been devised to ease the difficulty of transitioning from IPv4 to IPv6. (8 marks)
- (b) Assess the security benefits of Network Address Translation (NAT). In your answer, discuss how it compares to conventional firewall protection. (12 marks)

##### Question 6

Analyse the different Address Resolution Protocols (ARP), with reference to their function, how they operate, and how they influence the cost of communication. (20 marks)

##### Question 7

Evaluate in detail the features and design of the Internet Protocol (IP). (20 marks)