DECEMBER 2016

NETWORKS

Instructions to candidates:
a) Time allowed: Three hours (plus an extra ten minutes' reading time at the start – do not write anything during this time)
b) Answer any FIVE questions
c) All questions carry equal marks. Marks for each question are shown in [ ]
d) Mark allocation should determine the length of your answer and the time you spend on it. Generally, one mark is awarded for each valid point
e) Ensure that you pay particular attention to words underlined, in CAPITALS or in **bold**. FEW OR NO MARKS will be awarded to any question where these are ignored
f) Read all sections of any question before attempting any part of it
g) No computer equipment, books or notes may be used in this examination

1. a) Distinguish between underlined analogue and digital signals. Draw diagrams to illustrate the differences. [4]
    b) Describe the role played by the modem in the transmission of data signals. [4]
    c) i   Describe the role played by the multiplexor in the transmission of data signals.
       ii Define the term **polling** with relation to network control. [6]
    d) Explain how data can be distributed in a network by the means of packets. [6]

2. a) Open Systems Interconnection (OSI) has been operational since 1977 providing standard protocols for communication.
       i   Explain what is meant by the term **protocol**.
       ii Define the elements of OSI. [8]
    b) Name and describe ONE method in which data is transmitted along cables between LAN devices. [4]
    c) Explain what is meant by **ISDN** and how this will affect communications in the future. [4]
    d) Define **bandwidth** in relation to communications. Explain why email and video-conferencing might need different bandwidths. [4]

3. a) Explain what the acronym **HTML** means. Define its purpose. Explain how it differs from traditional programming languages. [3]
    b) Define the **tag** found in HTML. [2]
    c) Write a small section of HTML which contains some formatting. Explain what EACH part achieves. [12]
    d) Explain what is meant by an **applet**. Give an example of its use. [3]

4. a) Virus threats are common.
       i   Explain how contamination of files by viruses can be minimised.
       ii Explain the steps to be taken when an employee suspects that a virus has attacked his or her computer. [7]
    b) Describe FOUR situations where a password would be needed in a computer system. [4]
    c) Outline guidelines for devising a good password and show an example. [5]
    d) Identify additional features that should be built into a password system to ensure that it is not abused. [4]

5. a) i   Explain how Electronic Funds Transfer is achieved.
       ii Identify THREE DIFFERENT uses of business Electronic Funds Transfer. [10]
    b) Define **EDI** and describe the benefits it offers. [4]
    c) Describe in detail the roles of both MULTIPLEXOR and MODEM in the transmission of data across a network. [6]

6. a) Define the terms **JPEG** and **MPEG**. Explain why they are needed. [6]
   b) The Internet is used extensively by businesses to inform customers and to sell. Discuss the range of ways in which these are achieved. [14]

7. a) Write an article to employees of a company advising them on the use of their passwords already distributed. [5]
   b) Outline the threats to a network from outside of an organisation. [6]
   c) Explain what a **firewall** is and what it achieves. [3]
   d) Briefly describe a method of encrypting data. Show how the phrase "Hello friend" would be encrypted. [6]

8. An electrical appliance retailer has one main headquarters site where all its products are held in a warehouse. In addition it has shops located around the country. At headquarters, 80 telephone operators process orders received by telephone, although some handle mail orders for shorter periods. A LAN connects all staff on the headquarters site including the warehouse staff. Ensure all your answers are related to THIS company.
   a) Explain how the LAN would be used to process the orders received:
      i   by mail
      ii   by telephone [8]
   b) The company's shops are also connected via an **intranet**. Explain what this means and how it might be used to ensure an efficient service for branch staff and hence its customers. [4]
   c) The retailer proposes to automate website-generated customer orders. Describe the steps that will need to be taken to achieve this. [8]