



# ICM

MARCH 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
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1.
    - a) The terms the **Internet** and the **World Wide Web** are frequently used interchangeably. Give a definition for EACH, making the difference between them clear. [4]
    - b) Explain the process you would follow in setting up your own domain name. [4]
    - c) Describe the client server model, defining the terms '**client**' and '**server**'. Give examples of possible applications of the model. [4]
    - d) Discuss how the Internet has changed the way in which business operates. [8]
  2.
    - a) Computers are vulnerable to security threats including hacking and viruses. Discuss the steps you can take to secure your computer system. [8]
    - b) Explain the purposes of a computer virus, giving examples of how they operate. [4]
    - c) Write a role profile (job description) for the role of network supervisor/manager. [8]
  3. An office has 20 computers. The manager has decided to set up a LAN and has asked you to advise on how to do this. Write a short report for the manager which:
    - a) presents the benefits of using a LAN [4]
    - b) proposes TWO possible network topologies, presenting the advantages and disadvantages of EACH. You should provide a sketch of each topology. [10]
    - c) explains, with reasons, what additional hardware will be required to connect the computers into a LAN. [6]
  4.
    - a) A university lecturer receives many emails during the course of their working day. These emails may include: questions from students; pieces of coursework; messages from other lecturers within the same university; junk mail; internal administrative messages; staff newsletters; messages from external contacts; and work to review from academic journals.  
Describe THREE methods by which the lecturer might manage these emails in an effective way. [6]
    - b) The lecturer wants to send a coursework assignment question to a group of students. The assignment question is a document in Word 2010 format. The lecturer wishes to send it as an attachment and is aware that many of the students receive emails on a mobile phone. What issues does this raise and how could these issues be resolved so that students who receive messages on their mobile phone are able to read the attachment? [4]
    - c) The lecturer wishes to send a spreadsheet of students' marks to another member of staff within the same university. Explain how this might be done in a secure manner. [4]
    - d) Explain what is meant by **email etiquette**, illustrating your answer with TWO email etiquette rules. [6]
  5.
    - a) Name the SEVEN layers of the original Open Systems Interconnection model (OSI model), in the correct order, briefly describing the purpose of EACH layer. [15]
    - b) Reference is sometimes made to Layer 8 of the OSI model. Explain what Layer 8 may refer to. [2]
    - c) Define **bandwidth** and explain why it is important. [3]

*continued overleaf*

6. a) Explain what is meant by **HMTL**, describing its purpose. [2]  
 b) Consider the following HTML code fragment:
- ```

<!DOCTYPE html>
<HTML>
<HEAD>
<TITLE>Your Title Here</TITLE>
</HEAD>
<BODY BGCOLOR="FFFFFF">
<HR>
<a href="http://awebsite.com">Website Name</a>
is a link to another website
<H1>This is a Header</H1>
<H2>This is another Header</H2>
You can send me mail at <a href="mailto:support@anycompany.com">
support@anycompany.com</a>.
<P> This is a new paragraph!
<P> <B>This is another new paragraph!</B>
<BR> <B><I>This is a new sentence.</I></B>
<HR>
</BODY>
</HTML>

```
- Sketch out how the code would appear when rendered, explaining the format and purpose of EACH line within the webpage. [10]
- c) Describe in detail what is meant by **FTP** and give an example of its use. [2]  
 d) Explain what is meant by EACH of the following, in each case giving ONE example of its use:
- i URL [6]
  - ii Applets
  - iii JavaScript
7. a) 'The Internet is a necessary evil in the field of education. It has transformed learning, but it also has several downsides.' Discuss this statement, giving arguments for and against. [10]  
 b) A school has decided to set up an intranet and asked you to advise them. The school has a network of 100 computers. Write a report which highlights:
- i the benefits of an intranet [3]
  - ii any issues or disadvantages of an intranet [3]
  - iii the hardware and software which may be required [4]
8. a) A website designer has several video files and still images which she has taken using a high quality digital camera. She wishes to download these onto a computer so that she can then load them onto a website. Explain the file formats she might use for doing so, and the process that she would go through in order to download the video files and the images from the camera and prepare them for incorporation within a website. [10]  
 b) Define EACH of the following terms and in each case explain their purpose:
- i HTTP [6]
  - ii W3C
  - iii TCP [4]
- c) Describe in detail the role of a MULTIPLEXOR in the transmission of data across a network. [4]