



MARKSCHEME

November 2009

INFORMATION TECHNOLOGY IN A GLOBAL SOCIETY

Higher Level

Paper 3

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Examiners should be aware that in some cases, candidates may take a different approach, which if appropriate should be rewarded. If in doubt check with your Team Leader.

In the case of an “identify” question read all answers and mark positively up to the maximum marks. Disregard incorrect answers. In the case of a “describe” question, which asks for a certain number of facts *e.g.* “describe two kinds”, mark the **first two** correct answers. This could include two descriptions, one description and one identification, or two identifications.

“ITGS terminology refers to both the IT technical terminology and to the terminology related to social and ethical impacts.”

1. Define the following terms:

(a) IP address

[2 marks]

- Internet protocol
- numerical identification
- the location of a resource on a network.

Award [1 mark] for each point up to a maximum of [2 marks].

(b) MAC address.

[2 marks]

- media access control
- a hardware address that uniquely identifies each node of a network
- identifier
- assigned to a network adapter.

Award [1 mark] for each point up to a maximum of [2 marks].

2. (a) **The *N&Q Investments* network manager intends to use DHCP in order to add new workstations to the company network. Explain how the use of DHCP can reduce the workload of the network manager.** **[6 marks]**

Examples of points that may be included:

- dynamic host configuration protocol is used by network devices/clients
- obtains the parameters necessary for operating on a network
- possible addresses are held on a server
- domain names held on server
- server assigns an address
- for a specified time period
- no need for administrator to assign address manually
- easy to add new devices
- useful when new devices often encountered such as WiFi clients at an airport.

[1–2 marks]

A limited and essentially descriptive response, showing little understanding of the topic and little awareness of the importance of IP addresses.

[3–4 marks]

An appreciation that DHCP assigns addresses but lacking in technical detail.

[5–6 marks]

A clear and detailed explanation of how DHCP works plus an appreciation of how this saves work by specifying what the network manager no longer has to do.

- (b) **“N&Q Investments is trying to reposition itself as an environmentally responsible organization and is concerned about its ‘carbon footprint’ and the escalating travel costs, particularly with the need to train staff in the new offices.” (lines 40–42)**

With reference to relevant steps taken by other companies, examine *two* strategies that N&Q Investments could adopt to reduce its “carbon footprint” when training staff in new offices.

[8 marks]

Examples of points that may be included:

- make more use of video conferencing, this will reduce the need to travel
- encourage the use of VoIP services such as Skype, this will also reduce the need for travel and encourage staff to think in terms of virtual meetings
- take measures to reduce number of servers/data centres, this will reduce electricity usage
- use virtualization techniques, this reduces the number of physical devices required
- use VPNs to reduce the number of physical devices dedicated to their processes
- use a virtual learning environment (VLE)
- make use of online training.

In this question it is expected that there will be a balance in the ITGS terminology between IT technical terminology and the terminology related to the social and ethical impacts.

[1–2 marks]

A limited response that indicates very little understanding of the topic and uses little or no appropriate subject terminology.

[3–5 marks]

A reasonable explanation that demonstrates some understanding of the topic. Some relevant examples are used to support explanations within the response. There is some use of appropriate subject terminology in the response. At the bottom end of the band the response may be descriptive and lack detail.

[6–8 marks]

To enter this band, there must be some reference to other companies that have reduced their “carbon footprint” when training staff in geographically diverse locations. A clear, detailed explanation of the issue which demonstrates a thorough understanding of the topic. Relevant examples are used to support explanations within the response. There is appropriate subject terminology throughout the response, an explanation of how the technology works and the minimal requirements for the technology to be applied effectively.

3. As more employees travel on company business, *N&Q Investments* will require a detailed set of company policies for staff when they are not working in an *N&Q Investments* office. Discuss procedures that staff will need to follow relating to the security and the integrity of data when travelling. *[12 marks]*

Examples of points that may be included:

- which computers can be used
- trusted hotspots
- storage of data on devices
- specified e-mail addresses to use
- secure storage of data files belonging to clients/Hector/Betty
- secure storage of devices
- back-up procedures
- synchronizing versions
- work offline
- set firewall, change passwords
- secure encryption of data
- use of VPN, WPA2
- logging onto client networks
- a balanced set of recommendations should include dos and don'ts
- evidence of policies quoted from other companies.

In this question it is expected that there will be a balance in the ITGS terminology between IT technical terminology and the terminology related to the social and ethical impacts.

<p>Opinion discuss, evaluate, justify, recommend and to what extent</p>	<p>0</p>	<p>No knowledge or understanding of IT issues and concepts or use of IT terminology.</p>
	<p>1–3 marks</p>	<p>A brief and generalized response with very little knowledge and understanding of IT issues and concepts with very little use of IT terminology.</p>
	<p>4–6 marks</p>	<p>A response that may include opinions, conclusions and/or judgments that are no more than unsubstantiated statements. The response will largely take the form of a description with a limited use of IT terminology and some knowledge and/or understanding of IT issues and/or concepts. If no reference is made to the information in the stimulus material, award up to [4 marks]. At the top end of this band the description is sustained. At the lower end of the band a tendency towards fragmentary, common sense points with very little use of IT terminology.</p>
	<p>7–9 marks</p>	<p>A response that demonstrates opinions, conclusions and/or judgments that have limited support. The response is a competent analysis that uses IT terminology appropriately. If there is no reference to IT terminology the candidate cannot access this markband. There is evidence that the response is linked to the information in the stimulus material. At the top end of the band the response is balanced, the response is explicitly linked to the information in the stimulus material and there may be an attempt to evaluate it in the form of largely unsubstantiated comments. There is also evidence of clear and coherent connections between the IT issues. At the lower end of the band the response may lack depth, be unbalanced or tend to be descriptive. There may be also implicit links to the information in the stimulus.</p>
	<p>10–12 marks</p>	<p>There must be evidence of independent research for candidates to reach this markband. A detailed and balanced (at least one argument in favour and one against) response that demonstrates opinions, conclusions and/or judgments that are well supported and a clear understanding of the way IT facts and ideas are related. Thorough knowledge and understanding of IT issues and concepts. Appropriate use of IT terminology and application to specific situations throughout the response. If there is no reference to IT terminology candidates cannot access this markband. The response is explicitly linked to the information in the stimulus material. At the lower end of the band opinions, conclusions and/or judgment may be tentative.</p>

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