



# **MARKSCHEME**

**May 2010**

## **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. **Describe the steps that a doctor in Village A’s clinic must take in order to access this image.** *[4 marks]*

**Step 1**

- connect to remote system.

**Step 2** (*allow any one of the following*)

- enter username and password
- login to remote system.

**Step 3** (*allow any one of the following*)

- access relevant folder on server
- select image on server.

**Step 4** (*allow any one of the following*)

- save image to local computer
- open image in appropriate software.

*Award [1 mark] for each step up to a maximum of [4 marks].*

2. (a) **Compare the use of the IT facilities at Village A’s clinic and the cell (mobile) phone technologies at Village C’s clinic in providing medical services.** [6 marks]

- both can send and access medical images such as photographs, scans and x-rays from the hospital to the clinic and in reverse. However, the Internet connection using the landline at Clinic A would enable larger and more detailed images to be sent and received
- both clinics have cell (mobile) phone access which would mean that images could be sent from patients outside the clinic; and low quality images to be sent and received
- both clinics can access the hospital doctors for advice directly through the use of the cell (mobile) phones when they are at the clinic or at the patient’s residence
- text messages from the cell (mobile) phones would provide limited communications between doctors compared to the e-mail facilities over the Internet
- the PC can access more information than a cell (mobile) phone can as it can connect to the Intranet at Oobunta Hospital and the online medical expert system as well.

*Accept other uses and medical services that can be provided by the technologies after discussion with your team leader.*

*Considering that the country is in Africa some candidates may assume that there are limitations with the infrastructure and the cell (mobile) phones compared to those in use in other countries. Any such assumptions should be stated; otherwise it can be assumed that the candidate may not fully understand the capabilities of these technologies.*

**Examiners must be aware that for a candidate to reach the top markband [5-6 marks] there must be explicit comparisons between the IT facilities in Village A and Village C. Where explicit comparison occurs examiners must write E in the left hand margin.**

**Where there is only an implicit comparison between the IT facilities in Village A and Village C examiners must write I in the left hand margin. The maximum mark for this type of response is 4.**

**It is not necessary for all suggested answers to be included. Examiners should base their mark primarily on the information in the markbands.**

**[0 marks]**

*No comparison, explicitly or implicitly.*

**[1–2 marks]**

*A limited comparison showing little understanding of the capabilities offered by any of the technologies for accessing medical services. There may be an implicit comparison describing the use of IT facilities and/or mobile phone technologies at only one location, for example an answer that focuses on the use of the PC's in Village A only.*

*Applications of the technologies that are not linked to specific medical services cannot be accepted at the next levels.*

**[3–4 marks]**

*An adequate comparison of how the technologies at both clinics can be used to access some medical services, but there is a lack of detail at the lower level. Alternatively, one of the clinics is considered in detail. At least two different uses of the technologies, and associated medical services, are required at this level.*

**[5–6 marks]**

*A clear and detailed comparison of how the facilities at both clinics can be used to access the medical services with some discussion of limitations at the higher level. At least two different uses of the technologies, and associated medical services, are required at this level.*

- (b) **Examine why Dr Ogola would prefer doctors to use a medical expert system rather than an online search engine to diagnose patients.** [8 marks]

Answers in favour of using an expert system and against the use of a search engine might include:

- the use of the expert system will ensure that all patients have access to the knowledge stored in it as all doctors have access to the information
- it will ensure that relevant enquiries are not neglected as the expert system requires/asks for a wide range of input
- the Internet search may be flawed as the search terms may not include all the information about the patient's condition
- the expert system is up-to-date as it can be updated with the latest diagnostic tools and treatments from the manufacturers on a regular basis
- the expert system use will reassure patients that they are getting proper attention because the expert system contains all the information about the possible illnesses
- the use of the expert system will ensure a minimum quality of consultation whichever doctor is seeing the patient
- patients may lack confidence in search engine results because Internet information can be unreliable
- the search engines are not designed to find and present information about medical conditions in a useful format
- patients may lose confidence in the doctors if they use a search engine they can use themselves
- the quality of the information on the web sites may be suspect for a variety of reasons (at least one of these must be supplied)
- the information obtained from the expert system does not depend on the Internet search skills of the doctor which may not be effective in finding the appropriate information.

*Accept other reasons for an expert system and against the use of the Internet search engine after discussion with your team leader.*

**It is not necessary for all suggested answers to be included. Examiners should base their mark primarily on the information in the markbands.**

**[1–3 marks]**

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

**[4–6 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.*

**[7–8 marks]**

*A clear, detailed examination of the issue which demonstrates a thorough understanding of the topic. Relevant examples are used to support explanations within the response. There is appropriate ITGS terminology throughout the response.*

3. **Using information from the case study and your independent research, discuss the considerations that need to be taken into account by the hospital management when it makes decisions in choosing an EMR solution and the choice of suppliers. [12 marks]**

**The EMR system**

- ability to meet requirements of hospital
- range of other features offered
- security of the system
- reliability of the system
- platform and network requirements and possibilities
- accessibility over intranet and outside clinics
- use of current network and IT facilities
- staff needed to run the system
- able to be modified to suit special/local requirements
- able to be purchased in modules.

**Installation of the system**

- implementation costs
- training of staff – who, when, where, how, what
- documentation supplied
- type of changeover strategy
- impact of the changeover strategy
- assistance with installation.

**Comparison with other systems**

- similarities and differences between various systems.

**Cost/Benefit analysis**

- running costs
- costs up front
- total cost of ownership.

**Future enhancement**

- upgrade plans for EMR
- cost of upgrades.

**The suppliers**

- location of suppliers
- references from other users
- qualifications of staff
- case studies available
- examples of other services
- backup service included
- time to respond to problems
- ongoing maintenance contracts.

*Accept other considerations after discussion with your team leader.*

**It is not necessary for all suggested answers to be included. Examiners should base their mark primarily on the information in the markbands.**

**Any additional material to that in the Case Study constitutes research. This must be indicated by writing R in the left hand margin.**

<p><b>Opinion discuss, evaluate, justify, recommend and to what extent</b></p>	<b>0</b>	<p><i>No knowledge or understanding of IT issues and concepts or use of IT terminology.</i></p>
	<b>1–3 marks</b>	<p><i>A brief and generalized response with very little knowledge and understanding of IT issues and concepts with very little use of IT terminology.</i></p>
	<b>4–6 marks</b>	<p><i>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].</i></p> <p style="text-align: center;"><i>At the top end of the band the description is sustained.</i></p> <p style="text-align: center;"><i>At the lower end of the band a tendency towards fragmentary, common sense points with very little use of IT terminology.</i></p>
	<b>7–9 marks</b>	<p><i>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.</i></p> <p style="text-align: center;"><i>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.</i></p> <p style="text-align: center;"><i>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.</i></p>
	<b>10–12 marks</b>	<p><b><i>There must be evidence of independent research for candidates to reach this markband.</i></b></p> <p><i>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 ITGS terminology and application to specific situations throughout the response. <b>If there is no reference to ITGS terminology candidates cannot access this markband.</b> The response is explicitly linked to the information in the stimulus material.</i></p> <p style="text-align: center;"><i>At the lower end of the band opinions, conclusions and/or judgment may be tentative.</i></p>

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