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MARKSCHEME

November 2010

INFORMATION TECHNOLOGY IN A GLOBAL SOCIETY

Higher Level

Paper 3

7 pages

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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)   *bandwidth*   *[2 marks]*

  Answers may include:
  - a measure of data
  - in a communication link
  - measured in bits (or multiples of bits) per second.
  - Amount of data that can be transmitted
  - In a fixed amount of time
  - Speed at which data is transferred

  or

  - the difference between the upper and lower cutoff frequency
  - of an analogue signal
  - measured in hertz.

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

  (b)   *embedded IT system.*   *[2 marks]*

  Answers may include:
  - special purpose computer system
  - internal to some other device
  - performs a limited/dedicated range of tasks
  - usually works in real-time

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

2. **(a)** **With reference to the case study and to electronic medical record (EMR) management systems that you have studied, explain how compatibility issues may affect the development of an EMR management system in the East African country.** *[6 marks]*

Answers may include:
- compatibility issues between different versions of software
- existing data may be insufficient for new system
- need for systems at different locations to be able to communicate
- need to exchange data accurately
- need to exchange data consistently
- different vendors do not necessarily make compatible systems
- need to integrate with existing systems
- old paper-based systems will still be in use
- may be easier in the East African country because many centres do not have legacy systems
- testing the disaster recovery plan
- reviewing/updating the disaster recovery plan.

[1–2 marks]
A limited and essentially descriptive answer showing little understanding of the topic and little awareness of compatibility issues.

[3–4 marks]
An appreciation that there may be compatibility problems in the development of a widespread EMR management system but lacking in detail or may not refer to research or the situation in the case study.

[5–6 marks]
A clear and detailed explanation of issues affecting the development of EMR management systems and why they are important in this situation. Some evidence that research has been carried out.

(b) **With reference to the case study and to specific examples that you have studied, examine how telemedicine may help medical staff to provide a better service to patients living in remote areas.** *[8 marks]*

Answers may include:
- quick access to expertise from a central facility
- medical records can be transferred from one centre to another
- symptoms can be shown to doctors in other centres
- sharing of images such as x-rays
- possibility of robotic surgery
- complex procedures can be explained to a remote assistant in real-time.

[1–3 marks]
A limited and essentially descriptive answer, which may only cover one method or makes no meaningful attempt to comment on the methods.

[4–5 marks]
Some discussion of different methods but not necessarily citing own research or specifically mentioning the case study.

[6–8 marks]
A thorough coverage of a variety of methods with real examples quoted. The answer must relate to the issues in the case study.

3.   **Once the hospital and the clinics have implemented an EMR management system, they will need to develop a suitable disaster recovery plan.**

       Taking into consideration the special circumstances of the case study, and referring to the disaster recovery plans of other organizations, discuss the main points that should be included in a suitable disaster recovery plan.   *[12 marks]*

       Answers may include:
- where the data is to be located
- where the backups are to be located
- frequency of backups
- procedures to follow in the result of a disaster
- prioritizing the data to be backed up
- provision of failover systems
- degree of automation needed
- who is responsible (*i.e.* communication, disaster recovery)
- comments on the local situation in the case study
- examples of the disaster recovery plan from other organization(s)
- who within the organization declares the disaster
- how personnel are informed a disaster has occurred.

Markband for all extended response questions

Opinion discuss, evaluate and to what extent	**0**	*No knowledge or understanding of IT issues and concepts or use of ITGS terminology.*
	1–3 marks	*A brief and generalized response with very little knowledge and understanding of IT issues and concepts with very little use of ITGS terminology.*
	4–6 marks	*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 ITGS 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 ITGS terminology.*
	7–9 marks	*A response that demonstrates opinions, conclusions and/or judgments that have limited support.* *The response is a competent analysis that uses ITGS terminology appropriately. If there is no reference to ITGS 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.*
	10–12 marks	***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 ITGS terminology and application to specific situations throughout the response. **If there is no reference to ITGS 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.*

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