



MARKSCHEME

May 2011

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. In the case of an “explain” question, which asks for a specified number of explanations *e.g.* “explain two reasons”, mark the **first two** correct answers. This could include two full explanations, one explanation, one partial explanation, *etc.*

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

1. Describe *two* characteristics of open source software.

[4 marks]

- the source code is available free of charge to the general public. It can be used, modified and/or distributed
- it is often developed by a community – this allows shared expertise/collective intelligence
- the user is usually expected to divulge any changes and improvements made to the software for others to use – this allows continual / coordinated development by the community
- the eliminations of bugs and improving the software is realized at a much quicker rate – this is because many programmers are working on the software.

*Award [1 mark] for identifying each characteristic up to a maximum of [2 marks].
Award an additional [1 mark] for the relevant description of each characteristic up to a maximum of [2 marks].*

2. (a) Carmen’s web site makes use of the MySQL database management system (DBMS). Explain how a DBMS protects underlying data (*lines 76–77*) in the database from unintended alterations. **[6 marks]**

A database management system (DBMS) is a set of computer programs that controls the creation, maintenance and the use of a database. A DBMS allows users to store, edit and retrieve data in a structured way which can be done using the DBMS interface or using a structured query language (SQL). Also it provides facilities for controlling data access, enforcing data integrity, managing concurrent users of the database, and backup and recovery of the database.

Answers may include:

- access privileges (any comment about user logins/profiles/passwords/read-write-edit)
- enforces ACID rules (any comment about transactions *e.g.* commit/timeout/rollback)
- concurrency (any mention of prevention of conflicting data accesses, record locking *etc.*)
- enforcement of a key field
- data restoration features (not ordinary data backup but features that allow roll back if damage occurs)
- protects the data from conflicting actions by the applications
- provides data/application independence
- makes it possible to produce new / alter old applications without having to change the schema
- enforcement of integrity rules
- data validation (any mention of examples such as existence of data in a field, size, length).

N.B. Candidates may inadvertently refer to validation processes in a database rather than those provided by a DBMS.

[1–2 marks]

A limited answer where only one feature is considered showing little understanding of the topic.

[3–4 marks]

A reasonable explanation that demonstrates some understanding of the topic. One in depth explanation of a feature or the explanation of two features that lack detail must be present for 4 marks.

[5–6 marks]

A clear and detailed explanation of 2 or 3 DBMS features that prevent the unintentional alteration of the underlying data.

- (b) **With reference to lines 99–100, examine two of the methods of payment that could be provided on Carmen’s improved web site.** [8 marks]

*An extensive list of points about each method of payment is provided below. Only **some** of these are needed in the examination of the two methods of payment chosen.*

Marks should be based on the quality of the examination, not on the number of points used. A detailed and balanced examination of advantages and disadvantages with use of examples and ITGS terminology is required for full marks.

Considerations that apply to the choice of using a gateway payment service, e.g. PayPal

- security, use, access to and privacy of financial information obtained by the gateway service
- number of currencies, credit cards accepted linked to retail outlets and banks using validation checks such as card code verification (CCV) ensuring secure money transfer
- various fees – monthly, setup, cancellation, transaction (variable rate depending on sales volume), other services
- takes into account the country’s financial, tax and privacy regulations and laws
- analytical information about the sales is provided
- delivery and payment dispute resolution service / aid
- integrates payment and delivery services so that payment and delivery are secure and trouble free
- call back security – e-mail sent to buyer to confirm sale
- automatic confirmation of payment to buyer
- PayPal can immediately freeze your account and hold your money if they feel that you have committed a fraud or violated its user policy.

Considerations that apply to the choice of using a manual credit card processing system

- manual system may be time consuming – taking details off web site and putting them through manual system, sending confirmation back to buyer and can slow down receipt of money by Carmen and delivery of goods
- credit card may not be accepted by Carmen’s bank (unilateral agreement required for each type of credit card)
- privacy policy about credit card details needs to be developed and published on web site (should already be one there about other purchase details)
- need for SSL encryption on form where the buyer enters credit card details
- buyer may not get quick confirmation of payment for purchase of goods
- buyer may be suspicious about security and use of credit details as not linked to recognised secure system – may not purchase
- legal and financial regulations and laws about storage, privacy and access to the credit details need to be checked
- buyer may be worried about receiving the goods after payment is made.

Considerations that apply to the choice of using a direct deposit payment system

- needs to set up a separate bank account from all other accounts for deposits to be put into – for security
- buyer has control over their financial details
- potential security problem with publication of bank account details on the Internet
- unless automated delivery process slowed down if buyer does not deposit quickly
- chance of error on part of buyer – may deposit to wrong account
- buyer may not be familiar or comfortable with this type of payment method
- need for Carmen to set up an international transfer facility with the bank for international customers.

The question specifically stipulates only the methods of payment in lines 99–100 can be used. If a student provides a similar or modified method of payment please consult your team leader. A completely different method of payment should not be awarded any marks, but do not reject without consulting your team leader.

[1–3 marks]

The answer is largely descriptive and may make unsupported assertions about the advantages and/or disadvantages of the options. Little or no appropriate ITGS terminology is used.

[4–6 marks]

The examination may be partial or unbalanced. Advantages and/or disadvantages of the options are supported with some relevant examples. Some appropriate ITGS terminology is used. At the lower end of the band some parts of the answer may still be descriptive and lack detail.

[7–8 marks]

The examination is detailed and balanced. Advantages and disadvantages of the options are developed and supported with relevant examples. Appropriate ITGS terminology is used.

3. Discuss the use of site traffic analysis (line 69) and search engine optimization (line 102) as e-marketing tools.

Use information from the case study and give examples of services offered by the companies that you have investigated.

[12 marks]

E-marketing is the marketing/advertising of products over the Internet in order to entice customers to purchase products from the company directly or over the Internet.

Both site traffic analysis (STA) and search engine optimization (SEO) are required for a balanced examination and discussion. If only one is discussed the maximum is [8 marks].

STA may include:

- analysis of behaviour of visitors to a web site
- use of the info to assess marketing opportunities
- can be used as a basis to adapt the page to ensure it is found higher up the ranking, e.g. Google Page Rank
- specific reference to example(s) of suitable services.

SEO may include:

- used to ensure visibility
- can be provided by companies
- based on the use of meta tags, although some search engines have rules to counteract meta tag abuse
- can be carried out using white hat search optimisation (ethical and longer term) or black hat (in many cases unethically and short term)
- may be linked to web farms, but page ranking algorithms are designed to ignore these links, known as domain spam
- look for reciprocal links to, or banner advertising on, established pages, which tend to have a higher page rank, pay per click advertising
- aims to be seen as a hub or authority in this domain of discourse (photography / photographic services) using HITS to raise its rank
- can be achieved by purchasing a ‘sponsored link’ on a well known web site such as Google or Facebook
- specific reference to example(s) of suitable services.

A candidate will be considered to have carried out research if the response goes beyond the Case Study. It is not necessary to cite URLs.

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| <p>Opinion discuss, evaluate, justify, recommend and to what extent</p> | 0 | <p>No knowledge or understanding of IT issues and concepts or use of IT terminology.</p> |
| | 1–3 marks | <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> |
| | 4–6 marks | <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 the 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> |
| | 7–9 marks | <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> |
| | 10–12 marks | <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 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.</p> |

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