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MARKSCHEME

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INFORMATION TECHNOLOGY IN A GLOBAL SOCIETY

Higher Level

Paper 3

9 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.

If candidates answer more than the prescribed number of questions:

- 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*.

1.   **The management of the Piedmonte Theatre Consortium (PTC) wants its website to be able to show short video clips of forthcoming productions. When a user tried to view one of these, the video failed to play and the following error message appeared.**

    (a)   **Outline why the video failed to play.**   *[2 marks]*

        Answers may include:
- the video is not a Flash video
- the Flash player plug-in is an old version
- there are errors in the Flash script / ActionScript
- there are errors in the swf file
- there are errors in the FLV (Flash Video) file
- the file is corrupt.

        Accept for one mark only: lack of appropriate codec/ plugin/ client-side software to play the video

        Do not accept : Lack of the client-side software "Adobe flash player"

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

    (b)   **Describe *one* possible solution.**   *[2 marks]*

        Answers may include:
- uninstall Flash player / install latest version of Flash player – this will ensure that it is unlikely that the problem is at the user end
- upgrade the Flash Player plugin
- debug Flash script / ActionScript— there may be errors that prevent the file loading
- correct the corrupted file on the server
- refresh the page (if the file has been corrupted on transfer from the server, it may work on a second attempt)
- implement a compatible video format by the PTC
- install a code/ plugin/ client-software that can recognize the particular format.

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

2.   **Both theatre companies have substantial amounts of data saved in various formats in their existing systems. This data includes information such as customer and member details and records of previous performances. All of this data has to be copied to the new system.**

Explain why the developers might encounter problems when transferring existing data to the new system.   *[6 marks]*

Answers may include:
- the data stored may be duplicated / some entities may have the same name but have different properties
- problems of accuracy and time when digitizing/scanning any legacy data which is to be included and is currently not in digital format
- transfer medium failure/ power failure/network connectivity issues
- fields may be of different data types/lengths
- the data stored may be duplicated due to existing flat-file database
- the properties/attributes/fields of the entities or tables may be different
- the data may need to be "normalized" to avoid data redundancy
- examples of how data, such as performances/dates may be in incompatible formats
- methods of coding data will be different, e.g. codes for seat allocation / membership types etc.
- the ETL (Extract Transform and Load) software may not be able to read the existing file format.
- the existing file format may be unknown and would have to be reverse engineered
- the character encoding/character set/code page/character map/codeset of the files may be different so extended characters (eg. accented letters) in text fields could be wrongly copied
- file structures may be different / key fields may be different / may need to create new indexes
- the new system may report relational integrity errors / dependencies may not be fulfilled.

[1–2 marks]
A limited response that indicates very little understanding of the topic or the reason is not clear.

[3–4 marks]
A reasonable description of the problems that may arise from data transfer. The answer may be unbalanced and lack appropriate reasoning at the lower end of the band.

[5–6 marks]
A clear, detailed and balanced explanation of data transfer with clear evidence of technical understanding.

3. The PTC website needs to offer a range of functions which are easy to use, informative and enjoyable. It is also intended that it should function in a number of languages.

To what extent is there a conflict between the site's functionality and providing the site in many languages? You should make references to suitable sites that you have investigated. *[8 marks]*

Answers may include:

- The best possible result would be to have all desirable features/functions available in all target languages
- equality of access depends on the same functionality being available in multiple languages
- there are time/cost constraints to consider in adding translations
- there are many languages therefore pragmatic decisions have to be made about which to include as not all user requirements may be possible
- each additional language may require a significant amount of development time if there are embedded media (videos may need subtitling etc or new videos may need to be created).
- when information is changed it will have to be updated in a number of different language pages so there is much higher cost of maintenance required for a multi-lingual site
- some languages have totally different constructions, making it impossible to have the same paradigm for the site's design.
- there may be more considerations involved than just translating text, (for example retaining the same meaning, or space limitations on the website for longer text)
- some characters may not be rendered properly (this is less of a problem than previously – Unicode makes it more likely that characters will be rendered properly)
- many people speak English or one of the main European languages so non-native speakers may still be able to use the site and not need a translation to their first language.

SL and HL paper 1 part (c) and HL paper 3 question 3 markband

Marks	Level descriptor
No marks	• *A response with no knowledge or understanding of the relevant ITGS issues and concepts.* • *A response that includes no appropriate ITGS terminology.*
Basic **1–2 marks**	• *A response with minimal knowledge and understanding of the relevant ITGS issues and concepts.* • *A response that includes minimal use of appropriate ITGS terminology.* • *A response that has no evidence of judgments and/or conclusions.* • *No reference is made to the scenario in the stimulus material in the response.* • *The response may be no more than a list.*
Adequate **3–4 marks**	• *A descriptive response with limited knowledge and/or understanding of the relevant ITGS issues and/or concepts.* • *A response that includes limited use of appropriate ITGS terminology.* • *A response that has evidence of conclusions and/or judgments that are no more than unsubstantiated statements. The analysis underpinning them may also be partial or unbalanced.* • *Implicit references are made to the scenario in the stimulus material in the response.*
Competent **5–6 marks**	• *A response with knowledge and understanding of the relevant ITGS issues and/or concepts.* • *A response that uses ITGS terminology appropriately in places.* • *A response that includes conclusions and/or judgments that have limited support and are underpinned by a balanced analysis.* • *Explicit references to the scenario in the stimulus material are made at places in the response.*
Proficient **7–8 marks**	• *A response with a detailed knowledge and understanding of the relevant ITGS issues and/or concepts.* • *A response that uses ITGS terminology appropriately throughout.* • *A response that includes conclusions and/or judgments that are well supported and underpinned by a balanced analysis.* • *Explicit references are made appropriately to the scenario in the stimulus material throughout the response.* • *There are explicit references to sites that the student has researched.*

4. **Two prospective suppliers of the new system for the PTC have different approaches for developing the new system.**
   - **One has already supplied a ticketing system to a theatre company in Germany which it says can be modified to suit the needs of the two companies.**
   - **The other proposes to start from the beginning and develop a new system.**

   With explicit references to systems that you have studied, evaluate the merits of these two approaches. *[12 marks]*

Answers may include:
The template/modified solution:
- available more quickly
- available more quickly
- likely to be cheaper
- likely to have more bugs removed
- it has been more thoroughly user tested
- feedback from the previous customer
- support issues already developed
- example systems/situations described.
- certain legal issues may be a factor in weighing up the two options (especially if the existing software is copyright).
- technologies used in the existing system may be outdated but it will be necessary to use them in the modified option, whereas a new development will allow the choice of the newest technologies, standards and protocols
- a modified system may have unwanted functionality that cause confusion or security issues
- may need technical staff not present or training the existing staff
- documentation / Training materials already available.

The new solution:
- could be more explicitly tailored to the customer's needs
- PTC will have unique problems / better to design in special features from the start can use more modern development methodology
- can adapt to user's preferred platform
- more costly and time consuming
- many new systems developments fail to reach their completion, but altering an existing piece of software gives more guarantee that the result will be functional.

N.B. Many of these points can be expressed in a reverse manner.

HL paper 3 question 4 markband

Marks	Level descriptor
No marks	• *A response with no knowledge or understanding of the relevant ITGS issues and concepts.* • *A response that includes no appropriate ITGS terminology.*
Basic **1–3 marks**	• *A response with minimal knowledge and understanding of the relevant ITGS issues and concepts.* • *A response that includes minimal use of appropriate ITGS terminology.* • *A response that has no evidence of judgments, conclusions or future strategies.* • *No reference is made to the information in the case study or independent research in the response.* • *The response may be no more than a list.*
Adequate **4–6 marks**	• *A descriptive response with limited knowledge and/or understanding of the relevant ITGS issues and/or concepts.* • *A response that includes limited use of appropriate ITGS terminology.* • *A response that has evidence of conclusions, judgments or future strategies that are no more than unsubstantiated statements. The analysis underpinning them may also be partial or unbalanced.* • *Implicit references are made to the information in the case study or independent research in the response.*
Competent **7–9 marks**	• *A response with knowledge and understanding of the relevant ITGS issues and/or concepts.* • *A response that uses ITGS terminology appropriately in places.* • *A response that includes future strategies, conclusions and/or judgments that have limited support and are underpinned by a balanced analysis.* • *Explicit references to the information in the case study or independent research are made at places in the response.*
Proficient **10–12 marks**	• *A response with a detailed knowledge and understanding of the relevant ITGS issues and/or concepts.* • *A response that uses ITGS terminology appropriately throughout.* • *A response that includes conclusions, judgments or future strategies that are well supported and underpinned by a balanced analysis.* • *Explicit references are made appropriately to the information in the case study and independent research throughout the response.*