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MARKSCHEME

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INFORMATION TECHNOLOGY IN A GLOBAL SOCIETY

Higher Level

Paper 3

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 *eg* "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 *eg* "explain two reasons", mark the **first two** correct answers. This could include two full explanations, one explanation, one partial explanation *etc*.

1.   (a)   Identify *two* **advantages of using digital rights management (DRM).**   *[2 marks]*

Answers may include:
- protects the intellectual property of the copyright owner
- allows content providers to have a more accurate record of sales of digital media
- potentially cuts down on the piracy of the digital media
- provides consumer with peace of mind that content is not pirated
- difficult to bypass if activation required to online server
- can limit the number of devices which can use the digital media. Example – e-books, smartphones, *etc*
- allows *Cobb Publishing* to locate the source of illegal copies which are discovered, assuming they have embedded the code properly
- allows *Cobb Publishing* to specify not only who but how they will access the book (what things they can do in it, *eg* print, copy, change layout *etc*)
- maintains the integrity of the book content, *ie* doesn't allow modifications to be made to the content, therefore author is assured of …
- can allow *Cobb Publishing* or author to know about statistical usage of book
- can limit the quantity of readers and time available, so books can be loaned *etc* (library).

Award *[1 mark]* *for one advantage that is identified up to a maximum of* *[2 marks]*.

(b)   Identify *two* **disadvantages of using digital rights management (DRM).**   *[2 marks]*

Answers may include:
- piracy is adaptive and DRM may only prevent copying in the short term
- there are compatibility issues across platforms and systems
- not popular with consumers
- restrictive in use to limit the number of devices that can use the digital media
- digital media such as music or video could be locked to work only on particular physical devices making the media inaccessible if the device fails or is retired
- can limit digital media portability between devices
- is expensive to implement / time consuming / technical / complicated (*Award a Maximum of [1 mark] for some or all of these.*)
- is not absolutely safe and therefore might create a false sense of security in the authors
- could be privacy concerns from the readers who might not want their reading habits recorded. There is a lack of privacy because the system will have information about what users read *etc*, and could possibly use or sell this information in the future
- could annoy/put off customers from buying the books if they feel the limitations are too strict
- it is very difficult to pass on a book with DRM
- increase the costs of the e-book.

Award [1 mark] for one disadvantage that is identified up to a maximum of [2 marks].

2.   **Explain *three* ways that an e-book can be protected from unauthorized copying.**   *[6 marks]*

Answers may include:
- store the eBook online and make users log in to a personal account and read it remotely on their device without downloading and saving the complete product
- at frequent intervals the electronic book could require validation against the Cobb server to confirm it is a legitimate paid copy, similar to the Microsoft windows activation and registration process which identifies unauthorized use of serial numbers
- use a proprietary software that would encrypt and protect the e-book (disadvantage is compatibility issues with different devices and readers)
- encoding the PDF to not allow printing or saving or screen capturing of content
- uses a standard that protects the e-books against copying.

While the following are technically not protecting from copying, they are deterrents and are acceptable.
- password protect the document – this password could be supplied upon purchase confirmation
- watermarks of the document – this could be for the sample and the unwatermarked document could be available or unlocked with purchase confirmation
- embed an ID in each electronic copy that matches with a sale and allows *Cobb Publishing* to track the amount of copies being accessed when the user logs on or opens the book.

For each explanation:
Award [1 mark] for each way that is identified to protect an e-book from unauthorized copying.
For each way award [1 mark] for an explanation of how the method identified protects the e-book from unauthorized copying.
Award a maximum of [2 marks] for explanation of each way. Mark as [2+2+2].
Award a maximum of [6 marks] for the response.

3. When a customer (end-user) purchases an e-book from *Cobb Publishing*, they have to agree to the terms and conditions by ticking the box.

Cobb Publishing is aware that enforcing the end-user agreement through digital rights management (DRM) may be difficult.

Discuss whether it is possible for *Cobb Publishing* to enforce the terms and conditions in the end-user agreement through DRM. *[8 marks]*

Answers may include:
Difficult to enforce the end-user agreement
- software exists that allows the bypassing of encryption
- software exists that allows DRM to be ignored
- some devices allow screen capturing to take place in spite of schemes to prevent it
- some online services allow conversion of PDFs to editable and OCR formats
- general attitude to observing DRM is poor (*ie* popularity of peer-to-peer downloading of movies, music and other digital media)
- general understanding by the public regarding DRM is poor
- skill sets of hackers constantly developing to bypass protections
- changing media styles and devices means a constant focus to DRM
- civil law is behind the times and struggles to keep up with regards to digital media
- volume of breaches is burdensome for courts
- limited ability to deal with international breaches of DRM
- some countries do not agree/respect international copyright regulations.

End-user agreement can be enforced
- governments are interested in enforcing end-user agreements (*ie* loss of taxes due to piracy of digital media)
- breaches are reported where the end-user agreement is not being followed and *Cobb Publishing* follows up on these cases
- *Cobb Publishing* monitors the sales of e-books and that the conditions are followed (*ie* number of devices allowed, conditions for use)
- *Cobb Publishing* clearly states and carries through that all offenders of the end-user policy are prosecuted
- the successful prosecution of offenders has made end-users aware of the severe penalties that can result from ignoring end user agreement conditions
- any type of DRM (even if not perfectly secure) will make Cobb's books more difficult to pirate, and therefore criminals will prefer to target other bookstores whose books require less effort.

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. *Cobb Publishing* is considering developing a department within the company for self-publishing e-books. Discuss whether *Cobb Publishing* should follow this plan. *[12 marks]*

Answers may include:

Arguments for developing a branch within the company for self-publishing e-books:

- more opportunities for revenue
- allows the company to compete with other companies that allow end users to "publish" digital content themselves
- possible to utilize current online payment processes that are in place within the company
- possible development of innovative online production materials that could be patented allowing *Cobb Publishing* to become an industry leader in self-published e-books
- potential to expand the customer database through the new branch of self-published books
- additional jobs and revenue sources for *Cobb Publishing* (*ie* "design work", "copy editing").

Arguments for not developing a branch within the company for self-publishing e-books:

- more cost and logistics involved (*ie* office space, staffing, delivery of goods, running costs, *etc*)
- require high end servers to allow multifunctional access to users for publishing
- need to cater to multiple platforms
- need to cater for multiple languages
- need to develop training material for self-publishing authors
- potentially develop different/specific payment procedures if not already in place
- need to develop policies focusing on ownership of content
- could potentially open the organization to litigation for distributing copyrighted material
- could hurt the sales of other e-books published by the company.

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.*