

THIS PAPER IS NOT TO BE REMOVED FROM THE EXAMINATION HALLS

UNIVERSITY OF LONDON

CO1108 ZB

BSc, CerTHE and Diploma Examination

**COMPUTING AND INFORMATION SYSTEMS AND COMBINED DEGREE  
SCHEME**

**Information systems: foundations of e-Business**

Tuesday 8 May 2018: 10.00 – 13.00

Time allowed: 3 hours

There are **SIX** questions on this paper. Candidates should answer **FOUR** questions. All questions carry equal marks, and full marks can be obtained for complete answers to a total of **FOUR** questions. The marks for each part of a question are indicated at the end of the part in [.] brackets.

Only your first **FOUR** answers, in the order that they appear in your answer book, will be marked.

There are 100 marks available on this paper.

No calculators should be used.

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**Question 1**      Scenario: Sovereign

Sovereign is a large manufacturer of whisky and gin based in Scotland. For over 100 years their products have been sold all over the world. They specialise in high quality, high value drinks sold directly to hotels and restaurants. Although they have had a website for many years, it did very little in the way of sales and was mainly for online advertising. Recently, at a company meeting it was suggested that they redesign their online presence to reflect increasing demand.

Success has meant that the company now has to look at creating an E-commerce presence linked to an information system to manage its online business processes and day-to-day activities.

It was proposed that Sovereign should outsource the design and development of the new E-commerce presence to a company in India. It is argued that, by outsourcing the development, many benefits can be gained. However, not all members of the management team are in agreement. Issues arise in terms of communicating with the outsource supplier, and whether it is possible to specify all the requirements of the system in the UK and send these specifications to be interpreted correctly in India.

You have been asked to write a report that answers the following questions. You should relate your answers to these questions to the scenario above.

- (a) Discuss **FIVE** disadvantages that Sovereign will face if it takes an out-sourced approach to developing its new E-commerce presence and information system.

*Up to two marks will be awarded for each disadvantage discussed.* [10]

- (b) If Sovereign decides to develop its new E-commerce presence and information system in-house it will need a good understanding of the four phases of building and maintaining systems: initialisation, development, implementation, and operation & maintenance. Describe in detail **EACH** phase in relation to the proposed system and provide an example of the type of testing Sovereign will need to perform.

*Up to three marks will be awarded for a description of each phase and up to a further three marks will be awarded for an example of testing.* [15]

**Question 2**      Networks

- (a) Compare and contrast the characteristics of a Local Area Network, Metropolitan Area Network and Wide Area Network, and provide an example of each.

*Up to five marks will be awarded for describing and comparing the characteristics for each type of network.*

[15]

- (b) The networking infrastructure for a large company relies on both public and private infrastructures to support the movement of information across diverse technological platforms. Discuss **FIVE** key networking technologies that comprise a company's networking infrastructure.

*Up to two marks will be awarded for each type of networking technology discussed.*

[10]

### Question 3      Scenario: Simpson Graphics

Simpson Graphics is a graphic design company based in Bath, a small city in England. For ten years they have grouped together a range of graphic designers with different skills, working with clients for all their graphic design needs, from designing brand logos, to providing suites of graphic branding for companies to utilise at different times.

All designs have traditionally been provided on paper, and Simpson Graphics pay for very large storage facilities in order to hold all designs securely for their clients.

However, a recent flood at their storage facilities made Simpson Graphics realise that there are no proper backup facilities for the company's data. Furthermore, they have no way to recreate designs owned by their clients if they are ruined by a flood, fire or other disaster. This is a very serious issue. Often customers need to look at the designs of their logos, product designs, *etc.* to create new merchandise, such as company business cards or t-shirts, where the logo may feature prominently but in different proportions; so the original designs are vital. Without secure backups, Simpson Graphics risk losing customers and ruining their carefully cultivated reputation as reliable graphic design company.

Simpson Graphics have hired you as a database specialist to help them develop a new database management system. They want the new system to be as easy to use as possible and they want users not to have to worry about where designs are physically stored. They also need you to devise a backup and recovery strategy. As part of your report please answer the following questions.

For this question, you must use the information provided above in the scenario.

- (a) Describe how Simpson Graphics could use Entity Relationship Diagrams for developing the logical view of the database. Draw an Entity Relationship Diagram consisting of clients, designs and orders for Simpson Graphics.

*Up to five marks will be awarded for describing how Simpson Graphics could use Entity Relationship Diagrams and up to a further five marks will be awarded for the Entity Relationship Diagram.*

[10]



(b) Describe the relational database model and design a database schema for Simpson Graphics which includes the following three tables. Include in your design a primary key and **FOUR** entity attributes for each table.

- i. Clients
- ii. Designs
- iii. Orders

*Up to five marks will be awarded for each relational database table designed in the schema for Simpson Graphics.*

[15]

**Question 4**      Systems and Value Chains

- (a) Describe the key parts of a company's value chain and its supply chain.

*Up to five marks will be awarded for a description of a company's value chain and a further five marks will be awarded for a description of a company's supply chain.*

[10]

- (b) Explain what is meant by the term "business processes" and describe **FIVE** business processes that could form the value chain of a smartphone manufacturer. Then explain how this value chain can be used to identify opportunities for the smartphone manufacturer.

*Up to ten marks will be awarded for a full description of a set of business processes. Up to a further five marks will be awarded for an explanation of how the value chain can be used to identify opportunities.*

[15]

**Question 5**      Scenario: E-Cars

Established in 1990, E-Cars is fast becoming the largest electronic car manufacturer in Europe. Each of its five car factories is a major seller in its markets and the company has won numerous awards for its electronic car technologies.

Due to its excellent research and development, E-Cars has been concerned that it may be the subject of an internet attack by hackers trying to steal company secrets.

E-Cars has decided that it should increase its level of security regarding data. In particular, records should be digitised and encrypted so that only those employees who have the required level of permission can access them via usernames and passwords.

Furthermore, many of its staff take work home with them on their laptops, and these often do not have adequate security protection. Some staff computers also appear to be used for private purposes, and quite a few have had to have viruses removed from their hard discs.

For this question, you must use the information provided above in the scenario.

- (a) Compare the roles Firewalls and Intrusion Detection Systems could play in promoting security at E-Cars.

*Up to five marks will be awarded for a description of Firewalls and up to a further five marks will be awarded for comparing them with Intrusion Detection Systems.*

[10]

- (b) Describe the role digital certificates could play in protecting information held on laptop computers by E-Cars staff.

[5]

- (c) You have been asked to write a Security Policy for E-Cars, which should include an Acceptable Use Policy and an Authorisation Policy. Describe **FIVE** issues the Security Policy should address and explain why.

*Up to two marks will be awarded for each issue addressed in the policy.*

[10]

**Question 6**      Information Systems

- (a) Compare and contrast the organisational dimension of information systems with the technical and behavioural dimensions of information systems. For the organisational level, provide examples of hierarchy of authority, separation of business functions and business culture.

*Up to three marks will be awarded for each dimension, compared and contrasted. Up to a further six marks will be awarded for examples of hierarchy of authority, separation of business functions and business culture.*

[15]

- (b) Describe **FIVE** environmental factors that information systems must interact with when used in industry and provide a real-world example of each.

*Up to two marks will be awarded for each environmental factor described.* [10]

**END OF PAPER**