UNIVERSITY OF LONDON

GOLDSMITHS COLLEGE

B. Sc. Examination 2012

BSC AND DIPLOMA IN COMPUTING AND INFORMATION SYSTEMS

IS51010A   Information systems: The Foundation of E-Business

Duration: 3 **hours**

Date and time:

There are six questions on the paper. Please answer four questions. Full marks will be awarded for complete answers to four questions. Candidates must not attempt more than the required number of questions. Calculators are not allowed.

THIS EXAMINATION PAPER MUST NOT BE REMOVED FROM THE EXAMINATION ROOM

QUESTION 1

Scenario: Breakspeare's Spa

Micheal Evans has been running Breakspeare's Spa since the 1970s. It is an internationally renowned spa, offering beauty treatments, exercise regimes, and a wellness centre. Micheal Evans believes that the key to providing his customers with the best service is through attention to detail and understanding the customer's experience.

Following a recent meeting with the company that is the majority shareholder of the Spa, it has been decided that a chain of spa hotels will be opened in the next 12 months. This chain will provide business people with a boutique hotel experience, the latest technology, and a restful spa. Employees at these hotels will communicate with each other via internet technologies and each hotel will be a digital firm.

All supplies will be ordered electronically, and guests will be able to make bookings via the internet and mobile devices. Each customer will be assigned a electronic key card, which will allow them to order items and register for services.

Each hotel will have an information system, which will be used to process customer data, and to analyse the performance of the hotel. This information will be used for decision making and planning.

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

(a) Describe three input, processing and output components of an information system that Breakspeare's Spa could use and detail six different environmental factors that its information system must interact with.

[**15 Marks**]

(b) Compare and contrast a value chain and a supply chain for Breakspeare's Spa. Provide an example of each.

[**10 Marks**]

QUESTION 2

Scenario: Adams Architectures

Adams Architectures is a large architectural firm based in London. For over 30 years they have been involved in the design of buildings for both commercial and private use. All designs have been done on paper and they have very large store rooms holding all the designs for their clients.

After a recent flood at their offices, Adams Architectures has realised that it has no proper backup facilities for all their company data. Furthermore, Adams Architectures has no way for recreating designs owned by their clients if they were ruined by a flood, fire or other disaster. This is a very serious issue. Often customers need to look at the designs of their builds for maintenance purposes.

Adams Architectures has 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 to not have to worry about where designs are physically stored. They also need you to devise a backup and recovery strategy for their company. As part of the report please answer the following questions.

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

(a) Explain to Adams Architectures' management the properties of good quality information and also the difference between data and information.

[**5 Marks**]

(b) Describe how Adams Architectures could use Entity Relationship Diagrams for developing the logical view of a database. And provide examples of two Entity Relationship Diagrams.

[**10 Marks**]

(c) Describe the relationship between Relational Database Systems, Entity Relationship Diagrams and the process of Normalisation.

[**10 Marks**]

QUESTION 3

Scenario: Myland Trucks

Myland Trucks is a large industrial firm specialising in the design and manufacturing of farming trucks and associated equipment. The company is based in the north of England but also has offices across Europe.

Over the last three years, Myland Trucks has seen its market share reduce and also its profits fall. After a series of management meetings it was decided that its lack of using major computing systems in its production process was a key factor in them not keeping up with the competition, as well as having falling profits.

Myland Trucks normally build each truck by hand. However senior management are now considering using a fully computerised production line. The company is also considering upgrading its traditional design department with Computer Aided Design (CAD) workstations. These CAD systems will be used to create designs that can be used by the production line without human intervention.

Workers at Myland Trucks are not happy with the proposals. Historically new trucks were designed through a process of prototyping and this meant that continuous improvements could be made to the design of trucks.

The management team of Myland trucks is also considering the introduction of a transaction processing system for parts ordering.

The union at the company has threatened to go on strike if the new computerised production plant is implemented without staff being fully consulted. The union are afraid that the computerisation of Myland Trucks will lead to job losses, deskilling and major disruption.

As an Information Systems Consultant you have been asked to write a report answering the following questions.

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

(a) The process of change proposed by Myland's management team could lead to organisational inertia. To avoid organisational inertia, explain what other aspects of the company need to change together with the information system.

[**5 Marks**]

(b) Describe how Myland's management system could use computer aided design (CAD) to assist in mass customisation of its new trucks.

[**5 Marks**]

(c) Describe the major operations performed by a Transaction Processing System and then compare and contrast how Myland Trucks could operate its new Transaction Processing System in real-time and batch and processing modes.

[**10 Marks**]

(d) Explain why Myland's management are right to consider investing heavily in information systems and describe five strategic business objectives that could be met by making this investment.

[**5 Marks**]

QUESTION 4

(a) Describe in detail the four phases of building and maintaining systems. For each phase, define the key processes, how they are undertaken and what are the outputs.

[**10 Marks**]

(b) Explain why a systems development project may fail during one of the four phases of building and maintaining systems. Include in your answer at least three examples.

[**5 Marks**]

(c) There are many obstacles to applying IT effectively within the real world. These include *unrealistic expectations* and the innate *difficulty in building systems*. Discuss these two obstacles and provide an example of each.

[**10 Marks**]

QUESTION 5

Scenario: Goodbye Magazine Group

Established in 2000 GoodBye Magazine Group is fast becoming the largest magazine group in Europe. Each one of its 10 magazine publications is a major seller in its markets and the company has won numerous awards for its publications. Goodbye Magazine has ten offices and has over 200 workers directly contributing to the design, manufacturing and distribution of its publications.

Although Goodbye Magazine Group has very well organised production lines, it found that as it grew in size it was becoming less and less able to meet the demands from customers for different customisations types of content between its printed and online versions of its publications.

One particular aspect of Goodbye Magazine group was that each office used a different set of business processes to design, manufacture and then distribute its magazines. This was a problem in that staff and managers moving between publications and offices often had to learn whole new ways and processes for working.

Some staff complained about either having too little or too much information to manage the publication production process. Furthermore, workers said that often the information they did receive was not at the right time and was not formatted correctly. As a result the information they did receive was not appropriate and therefore could not be used for decision making. This was particularly true of middle managers. To compensate for this lack of timely and appropriate information, managers generally took to "over ordering" as a method of reducing the risk of running out of materials for the production of publications.

Some managers have now taken to creating their own small information systems. However, many of these systems did not communicate with each other. These islands of information were causing further problems as the data each held was often inaccurate.

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

(a) Define and describe a set of business process and related information systems that could be used by Goodbye Magazine group to create a new magazine publication. In your answer you must detail the relationship between the business processes and the information systems you recommend and explain the role played by the information system in improving the efficiency of the business processes you defined.

[**10 Marks**]

(b) To address Goodbye Magazine Group's information problems, write a proposal for three new information systems that can address the needs of those working on the new magazine. These workers include: writers and designers producing text and graphics for the magazine, middle management trying to make day to day decisions and those senior managers responsible for forecasting and planning. Explain why you have chosen a particular type of information system, what it will offer, and what benefits it will bring.

[**9 Marks**]

(c) Describe in detail the three problems associated with different parts of Goodbye Magazine Group having their own information system and explain the problem of over ordering.

[**6 Marks**]

QUESTION 6

Scenario: Mylos Law Firm

Mylos Law Firm is an internationally recognised company of lawyers specialising in corporate law. Since 1960, the company has represented hundreds of businesses, both in the UK and across Europe. A key aspect of Mylos work is the keeping of records of communications between clients and themselves.

Until recently, the majority of these communications were not held digitally but were kept as paper records in filing cabinets. Following a recent management meeting, it was decided that Mylos should increase its levels of security regarding data, in particular, records should be digitalised and encrypted so that only those employees who are allowed can access them via usernames and passwords.

Furthermore, many of the lawyers take work home with them on their laptops, and these often do not have adequate security protection. Some lawyers' computers also appear to be used for private use 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 entitled **Mylos Law Firm**.

(a) Describe the roles of firewalls, intrusion detection systems, and antivirus software could take in promoting security at Mylos Law Firm.

[**5 Marks**]

(b) Describe how encryption and digital certificates may be used to protect information held on laptop computers by Mylos Law Firm staff.

[**5 Marks**]

(c) Describe identity theft and explain how phishing can be used to steal identities from people who do not protect their computers with adequate security measures.

[**5 Marks**]

(d) Describe the following forms of malware (for malicious software): a virus, a worm, and a Trojan horse.

[**5 Marks**]

(e) You have been asked to write a Security Policy, an Acceptable Use Policy, and an Authorisation Policy for Mylos Law Firm. Describe each and explain what it would contain.

[**5 Marks**]