

UNIVERSITY OF LONDON

GOLDSMITHS COLLEGE

BSc Examination 2002

COMPUTING AND INFORMATION SYSTEMS

CS52006A (CS216) Introduction to Information Systems

Duration: 3 hours

Date and time:

-
- *Do not attempt more than FOUR questions on this paper. Full Marks will be awarded for complete answers to FOUR questions.*
 - *Electronic calculators are not needed for this examination and therefore should not be used.*

**THIS EXAMINATION PAPER MUST NOT BE
REMOVED FROM THE EXAMINATION ROOM**

Question 1.

Write short notes on **five** of the following

- (a) The distinction between soft and hard data, and their importance in Information Systems.
- (b) The use of neural networks.
- (c) The problems associated with Legacy systems
- (d) The use of computer aided design (CAD) in mass customisation.
- (e) The requirements for good quality information.
- (f) Groupware.

[25]

Question 2.

- (a) Describe four of the common flaws in the way people make decisions? [8]
- (b) What is a decision support system? What is the purpose of a decision support system? [5]
- (c) What do you understand by the term social context? [4]
- (d) What are some of the problems associated with using email and fax as methods of communication? [4]

Scenario: Tomorrow's Globe

Tomorrow's Globe is a popular factual science programme broadcast on channel 7 television. The show's producer is responsible for finding the most interesting and topical scientific stories to fill the show. To do this she uses an email distribution list that she periodically sends to all the publicity departments of the county's universities. If the university has research work that they feel may be suitable, they email back with some details and a contact phone number. If the story seems interesting, the producer then calls the researcher to find out more. Once she has a range of possible stories a meeting is held at channel 7 and the short list for the programme is finalised. The producer often finds she has to leave messages on her busy colleagues answering machines when planning the date and place of the meeting. Once finalised the best stories are filmed and the videotapes are then used in the programme broadcast to the nation.

- (e) In the above scenario identify the communication events and classify them in terms of place and time [4]

Question 3.

- (a) What is a computer database and why are they important in many Information Systems? [2]
- (b) What are the differences between the logical and physical views of a database system? [4]
- (c) Why is it useful to have this distinction? [2]
- (d) How do entity relationship diagrams help in the development of databases? [2]
- (e) Describe the relational data model. [4]

Scenario: Mercy Hospital patient database

The following are samples taken from the Mercy hospital database. Each patient is assigned a unique id number on admission, and their blood type, (A, B, AB or O), is subsequently entered into the database. Each patient is assigned a hospital ward, dependant on the treatment they require. Each ward has a surgeon associated with it. Below are relations held in the hospital database. The hospital realises the confidential nature and importance of the data it holds in this database, and have taken steps to ensure that only those so authorised can access the patient records.

id	p-name	address	blood type	ward
100	Smith	London	A	cardiac
101	Jones	York	B	neuro
102	Patel	London	A	cardiac
103	Chan	Dover	AB	neuro

s-name	ward
Goodman	Cardiac
James	Neuro

- (f) Given the above relations in the Mercy Hospital scenario give the result of applying
 - (i) project *id p-name blood-type ward* from *patient* [3]
 - (ii) join *patient* and *surgeon* when *ward* = 'cardiac' [4]
- (g) Given the ethical problems associated with the possible misuse of this medical data base, what ethical issues should Mercy Hospital consider when using this Information System ? [4]

Question 4.

- (a) What are the four elements of a data flow diagram? [4]
- (b) What is a context diagram? [2]

Scenario: Renting a video tape at Bobs Videos

Bobs video rental shop uses an Information System to control and track his stock of videos. When a customer wants to rent a video they must first provide their membership card, which carries their full name and address, and also indicate the title of the video they wish to borrow. Bob must first check the membership card to see if the customer has an account at the shop. The video title selected by the customer is then used to form a video request which is sent to recover the video ID number from his video inventory data base. Bob then uses this video ID number to find the correct tape in the extensive stock behind the shop counter. The cost of hiring videos depends on their popularity, popular films cost that little bit more to rent. The video inventory database contains the costs of hire for each video. Care must be taken to ensure the customer is charged appropriately. The shop prints both the cost of video rental and the customer's name on the bill, to give a more personalised service.

- (c) Draw the context diagram describing the above video rental scenario. [4]
- (d) Draw a level-1 data flow diagram for the above video rental scenario. [15]

Question 5

- (a) Why do information systems raise ethical and human issues? [3]
- (b) How do information systems depend upon people and how do they affect people? [4]
- (c) Compare and contrast how people and machines perform when executing tasks in general. In your answer describe the characteristics exhibited by people and machines when a task's execution involves the need for each of the following: [12]
 - i. Rule-following
 - ii. Understanding
 - iii. Imagination
 - iv. A Global view
- (d) Briefly describe the difference between machine- and human-centred design. [6]

END OF EXAMINATION