THIS PAPER IS NOT TO BE REMOVED FROM THE EXAMINATION HALLS

UNIVERSITY OF LONDON **CO3319 ZB**

BSc Examination

COMPUTING AND INFORMATION SYSTEMS AND CREATIVE COMPUTING

Decision Support and Executive Information Systems

Friday 10 May 2013 : 2.30 – 4.45 pm

Duration: 2 hours 15 minutes

There are **FIVE** questions on this paper. Candidates should not attempt more than **THREE** questions. All questions carry equal marks and full marks can be obtained for complete answers to **THREE** questions.

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

A hand held calculator may be used when answering questions on this paper but it must not be pre-programmed or able to display graphics, text or algebraic equations. The make and type of machine must be stated clearly on the front cover of the answer book.

1. Chemotherapy is a treatment often given to women who are suspected of having cancer that cannot be detected at an early stage. It can have unpleasant side effects such as extreme fatigue, headaches, vomiting and total loss of hair.
   A woman therefore faces the question, "Should I have the chemotherapy with all the possible side effects or reject it and take the chance that I do not have cancer?"

   Discuss how the approach to decision-making proposed by Herbert Simon and Henry Mintzberg may help such a woman reach a decision.

   [25 marks]

2. Local Authorities in the U.K. are run by councillors elected by the local community. They are ordinary citizens who besides attending council meetings may have full-time jobs.

   Discuss how the installation of a group decision support system (GDSS) may assist such councillors in their deliberations. Give details of the type of GDSS you would deploy and any disadvantages that might ensue.

   [25 marks]

3. The Ministry of Defence in the United Kingdom is often criticised for wasting billions of pounds of taxpayer's money. It recently commissioned the building of an aircraft carrier even though there is no money to equip it with aircraft. It also spent £3.2 billion on providing 3,200 armoured vehicles but at the present time is unable to deploy them usefully.

   Discuss how the adoption of an executive information system (EIS) might assist the Ministry of Defence to improve their decision-making in management and the procurement of new weapon systems.

   Give practical examples relevant to this task and emphasise any possible difficulties.

   [25 marks]

4. An electricity supply company charges its customers a price for electricity based on the supply and demand for electricity. The price is changed once a year if supply and demand conditions have changed over the period.

Below is a set of equations representing a model of the market.

(1)	De	=	a + bP + cNh + dNb	(demand equation)
(2)	Se	=	eP + fCP + gGT	(supply equation)
(3)	Nh	=	h +i(Yt - Yt-1)	(household equation)
(4)	Nb	=	j + kYCt + (1-k)YCt-1	(businesses equation)
(5)	Se	=	De	(equilibrium equation determining equilibrium price)

where,

De = demand for electricity
Se = supply of electricity
P = price of electricity
Nh = number of households
Nb = number of businesses
CP = cost of power generation
GT = government taxation
Yt = national income
Yt-1 = national income one year ago
YCt = current consumer income
YCt-1 = consumer income one year ago

a) You are required to illustrate this model by producing a METAGRAPH.

[8 marks]

b) Discuss the 'METAGRAPH approach' to model based management in a decision support system by comparing it with Geoffrion's 'Structured Modelling Method'.

If possible, in your answer, refer to the model in part (a).

[17 marks]

5. Databases come with various titles such as,

   Transactional database
   Relational database
   Multidimensional database
   Meta-database

   You are required to discuss the relevance of these databases to the development of decision support systems. In particular, emphasise the problems encountered and give practical examples relevant to a hypothetical business.

[25 marks]

END OF PAPER