UNIVERSITY of LONDON

291 0319W

B.Sc. EXAMINATION 2005

for External Students

West Zone

COMPUTING AND INFORMATION SYSTEMS

CIS 319 DECISION SUPPORT and EXECUTIVE INFORMATION SYSTEMS

Duration: 2 hours 15 minutes

Date and Time: Wednesday, 25 May 2005 : 10.00am - 12.15pm

There are FIVE questions on this paper.
*Do not attempt more than **THREE** questions. All questions carry equal marks and full marks can be obtained for complete answers to **THREE** questions.*
Electronic calculators may be used. The make and model should be specified on the script. The calculator must not be programmed prior to the examination. Calculators that display graphics, text or algebraic equations are not allowed.

Candidates are advised that their answers to all questions will be greatly strengthened by the citing of examples either of their personal experience or from written sources. Full referencing of sources is not necessary; an indication of the nature of the source is all that is required.

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

UL05/518

TURN OVER

1. Imagine that you have just finished High School. You have decided to continue with further education.
Discuss the problems you might face in making a rational decision as to the course and educational institution you might attend.
You must outline your arguments and conclusion according to Herbert Simon's theory of problem solving, explaining each step in the process.
What would you do if half way through the course you decide that you have chosen entirely the wrong subject to study?

[25]

2. (a) The following set of equations represents an economic model for a national economy.

$C_t = a_0 + a_1 (Y_t - T_t)$ (consumption sector)
$I_t = b_0 + b_1 Y_t + b_2 Y_{t-1}$ (investment sector)
$M_t = m_0 + m_1 Y_t + m_2 P_{t-1}$ (import sector)
$T_t = tY_t$ (taxation sector)
$Y_t = C_t + I_t + G_t + X_t - M_t$ (income identity)

Where, C_t = consumer expenditure
I_t = investment expenditure
M_t = import expenditure
X_t = export expenditure
T_t = total taxation
P_t = general price level
G_t = government expenditure
Y_t = national income
P_{t-1} = general price level lagged by one time period
Y_{t-1} = national income lagged by one time period.
a,b,m and t are fixed parameters.

You are required to draw a METAGRAPH of the above five models according to the principles laid down by Robert Blanning.
Some marks will be awarded for neatness and clarity. [17]

(b) Discuss the advantages of metagraphs as a modelling device and illustrate your arguments by using the metagraph obtained in part (a) of your answer. [8]

3. (a) Compare and contrast a Group Decision Support System (GDSS) with an Expert System (ES) [13]

(b) Discuss the ways in which an Expert System may assist in the functioning of a GDSS. Give practical examples where possible. [12]

4. Authorities in Hong Kong rate the academic standard of Universities in their region according to the number and quality of papers published in academic journals.
Quality ratings are A, B, C, and N. "A" is the highest rating and "N" stands for "no rating given".
There is a great deal of controversy over the grading of each article.
Below is a hypothetical extract from a relational table depicting lecturers' publications.

GRADE TABLE

Name	University Code*	Journal Code*	Date of publication	Title	Grade given
Li D.	004	B003	23-01-2004	Development of an EIS for British Gas	C
Wang F.	010	A102	24-01-2004	A new design strategy for DSS's	A
Wei W.	004	A007	08-02-2004	Review of Artificial Neural Nets	C
Chen L.	006	B018	11-02-2004	Is the relational database dead?	N
Liu W.	003	A102	23-10-2004	HCI problems in the A3XX airbus	A
Wang F.	010	A002	05-11-2004	Structured Modelling and Queuing Theory	B
Chen L.	006	B003	12-11-2004	Performance criteria for a marketing GDSS	N

* Each university and journal is given a code to identify it.

You are given the objective of providing the Hong Kong educational authority with a DSS for assessing the academic quality of individual academic institutions and individual members of staff.

Explain how you might restructure the above relational table in the form of a multidimensional database (MDBS) to help achieve this objective.
Give examples of the queries that such a database may answer and any calculations that it might have to perform.

[25]

5. The British Post Office has the largest post office network in the whole of Europe.
It has 16,000 post office branches throughout the UK. Of these 550 are owned directly by the post office, some are operated on an agency basis through a sub-postmaster and the rest on a franchise basis.
The products supplied by the post office are grouped into the following categories,

Mail: Sending, receiving and delivering UK and international mail.
Money Matters: Banking, bill payments, investments, insurance and personal loans.
Travel: Holiday essentials, including travel insurance and foreign currency.
Phone: Phone cards and mobile phone top-ups.
Licence: Motor vehicle driving, TV and fishing licences.
Pensions and Benefits: State pension and other state benefits collected through the post office.
Shop: Flowers and attraction tickets available to buy online.

(a) You are a systems analyst called in by the Chief Executive of the British Post Office to explain how an executive information system (EIS) may benefit the company.

In light of the information given above, detail the arguments you would use to convince the Chief Executive that purchasing an EIS would be worthwhile. [20]

(b) What counter arguments might the Chief Executive put to you? [5]

END OF EXAMINATION