BIRKBECK COLLEGE
(University of London)

MSc EXAMINATION

SCHOOL OF BUSINESS, ECONOMICS AND INFORMATICS

INFORMATION SYSTEMS

COIY0059H7

15 credits

FRIDAY 27th. May 2016

2:30 PM – 4:30 PM

INSTRUCTIONS

Candidates should answer TWO questions from Section A and ONE question from Section B.

If you answer more than TWO questions from Section A or more than ONE question from Section B only the marks from the best answers for each section will count.

There are five questions on this paper.

All questions carry equal weight: Marks for sub-questions are shown on the right below the sub-question where appropriate.

One mark is available for a well presented paper.

Time allowed: Two hours

Candidates must **NOT** bring any supplementary material into the examination.

Section A

Question 1

Central College Admission Application for School Leavers			Appl. No. 0053146
Title Given Name Family Name Mr Fred Charlesworth		Gender M	Home Telephone Number 020 7543 6721
Address House number, Post Code 53, W4 6QT			
Courses Applied for	Course Code	Course Title	
1st Choice	235	BSc Information Systems & Management	
2nd Choice	141	BSc Management & French	

Qualifications

Subject	Level	Year Taken	Grade Obtained
French	Advanced	2002	C
Computing	Advanced	2002	B
Economics	Advanced	2002	A
Business Studies	Intermediate	2002	Pass
Citizenship	Intermediate	2002	Pass
French	Intermediate	2000	Pass
Computing	Intermediate	2001	Pass
Economics	Intermediate	2001	Pass

School *(only complete if your school is in SE England and consents to this data being retained by the College for marketing purposes)*

School Name	West London Comprehensive

Contact Person Title : Mr Contact Person Surname : Chatsworth
Contact Person Position : Careers Advisor Contact Telephone No : 020 8543 7845
School Postcode: W4 6JY

The figure above is a sample of an application document that a College uses to admit students to tertiary level programmes. Assume that each school has only one person to liaise with College and University marketing personnel and that candidates only show their best result for a particular subject at a particular level.

a. Use Codd's process to normalise the data structure of the document to the third normal form showing intermediate forms.

(20 marks)

b. Explain the transitions between forms.

(6 marks)

c. Discuss whether the process is still useful in an era of Object-oriented and Agile development.

(7 marks)

[Total 33 marks]

Question 2

You have been commissioned to design and write the software to be loaded into a vending machine dispensing coffee. The machine will accept 50p and £1 coins from customers and dispense various forms of coffee priced at £1.50 and £2.00. There is a slot that discriminates 50p and £1 coins from other inputs (e.g. foreign coins; £2.00 coins). Other inputs are immediately returned. There are buttons for each kind of drink which are lit when sufficient funds are received. The machine will be in one of the following states: "waiting funds", "coin received", "offering drinks", "dispensing change" (when the amount inserted is greater than the price of the drink selected), "dispensing drinks" and "returning coins" when the user takes more than three minutes to make a selection after last inserting a coin. Assume that the logic for each selection i.e. and mixing of milk, sugar, water and coffee flavour will be defined later as sub-states of the "dispensing drink" state. The machine will have a message scrolling display, which will show: "Insert Coin"; "Invalid Coin", "Take your Change", "Drink being prepared" and "Transaction Cancelled" , at appropriate times.

Use UML notation to draw a Behavioural State Machine for the top level logic that the vending machine requires. Except for the first and terminal transitions, label each transition with a suitable event name together with guard conditions and actions where appropriate.

[Total 33 marks]

Question 3

a. Describe the factors that lead to IS development projects and explain who should be involved in identifying and prioritising them.

(16 marks)

b. Describe and explain the three kinds of feasibility for which IS projects should be assessed.

(17 marks)

[Total 33 marks]

Section B

Question 4

a. The NHS National Programme for IT (NPfIT) comprised a series of IS projects designed to provide modern IS for the NHS in the UK. The programme was terminated in 2013, and was widely regarded as an example of a failed IS programme. Write a short essay describing the programme and refer to the reasons for failure and the implications for IS professionalism.

[18 marks]

b. In what ways can a profession be **reserved** in the UK? Describe the pros and cons for regulation of the IS profession.

[15 marks]

[Total 33 Marks]

Question 5

a. What is malware? Describe three common forms of malware.

[18 marks]

b. In May 2010, Virusblokada, an anti-virus company in Minsk, Belarus, reported the discovery of the Stuxnet virus, which was later found to have infected systems at the Bushehr nuclear power plant in Iran. Write a short essay presenting your views on the implications of Stuxnet.

[15 marks]

[Total 33 Marks]