INFORMATION MANAGEMENT & CONTROL

Professional 1 examination
June 2000

MARKING SCHEME

Question 1

This question is based on Section 4 of the OLM and is designed to test students' knowledge of the practical applications of computer security.

(a) The dangers relating to **hardware** include:

Physical attacks: ½
Solution(s): Physical security
Alarms
etc. *1*

Unsuitable (hot/dirty/unsafe) environment: ½
Solution(s): Air filters
Fire protection
etc. *1*

Hardware failure: ½
Solution(s): Back-up procedures
UPS
etc. *1*

Insecure outside access: ½
Solution(s): Firewalls
Stand-Alone PCs for the Internet
etc. *1*

And/or
For any correctly identified danger ½
For any correctly identified solution *1*

up to a maximum of 6

(b) The dangers relating to **software** include:

Unauthorised access: ½
Solution(s): Password protection
Robust password policy
etc. *1*

Inappropriate Access: ½
Solution(s): Log user access
Audit trails
etc. *1*

Loss of original software: ½
Solution(s): Take copies of software
Keep a separate test environment
etc. *1*

Introduction of viruses: ½
Solution(s): Firewalls
Virus-checking software and procedures
etc. *1*

And/or
For any correctly identified danger ½
For any correctly identified solution *1*

up to a maximum of 6

(c) The dangers relating to **data** include**:**

Loss of data: ½
Solution(s): Regular, tested back-ups
Back-ups kept off site
etc. *1*

Out-of date and/or inaccurate data ('Data Integrity'): ½
Solution(s): Careful data-entry controls
Data dictionaries
etc. *1*

Incorrect changes to data: ½
Solution(s): Training
Appropriate password levels
etc. *1*

Misuse of data: ½
Solution(s): Separation of duties
Audit controls
etc. *1*

And/or
For any correctly identified danger ½
For any correctly identified solution *1*

up to a maximum of 6

(d) Clearly, any two relevant Acts of Parliament (or the equivalent in the student's own country) that were specifically designed to prevent computer misuse would qualify for a mark each; but the two in mind are:

Computer Misuse Act 1990	*1*
Data Protection Act 1984 (as amended by the 1998 Act)	*1*
	(2)
	(20)

Question 2

This question is based on Section 2.4 of the OLM, and seeks to test students' knowledge of both the theoretical and the practical applications of these much-used computer-design techniques.

(a) This part should be marked as follows:

- The three views used by SSADM are:
  - data: this includes what data is required and how it is generated, stored, processed and output.
  - functional definitions that summarise the user requirements of the system.
  - business activities or events that trigger the processing of data.

*Award ½ mark for **two** correctly-named views, and ½ mark for the **third** correctly-named view. (There are **no** marks for identifying just one view.)* *1*

The five modules of SSADM are:

1 Feasibility Study
- Prepare for the study
- Define the problem(s)
- Select feasibility options
- Assemble feasibility report

2 Requirements Analysis
- Stage 1 – analysis of any current system(s)
- Stage 2 – requirements of the new system

3 Requirements Specification
- Develop the requirements specification as a precursor to developing the logical system specification

4 Logical System Specification
- Stage 1 – Technical Systems Options
- Stage 2 – Logical Design

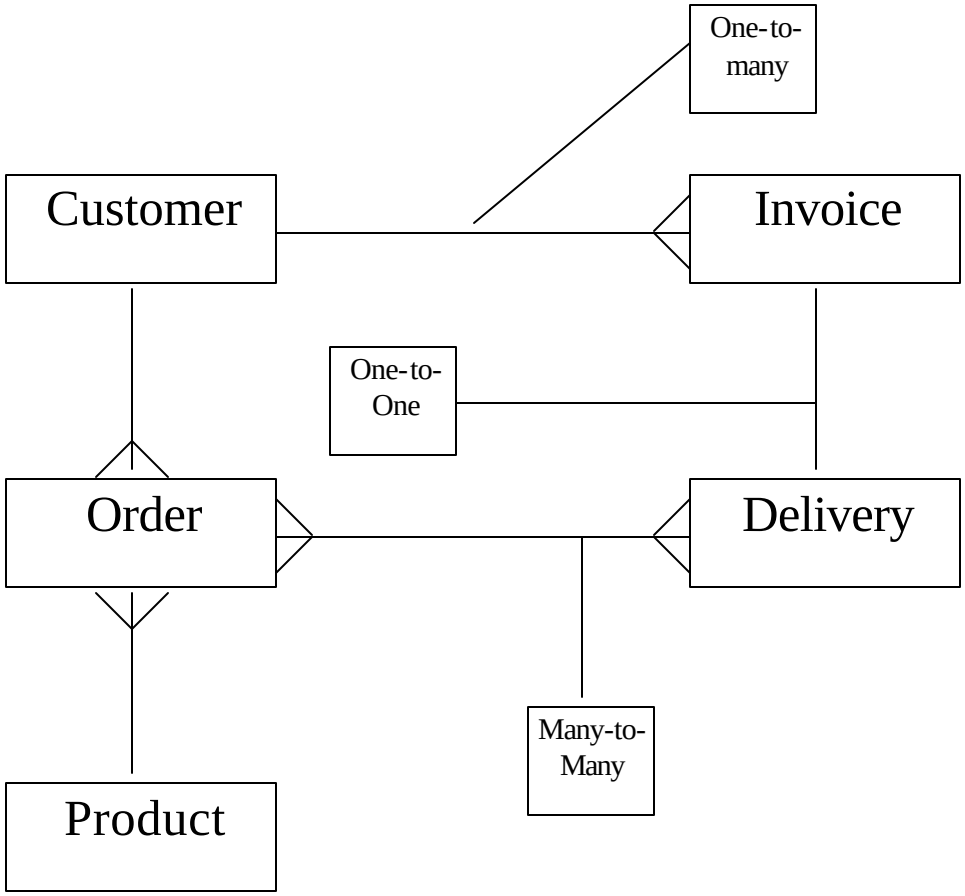
5 Physical Design
- Produce a physical design that specifies all data, processes, inputs and outputs for the system to agreed installation standards

Award 1 mark for each correctly named stage in the right order, and 1 mark for a reasonable description of the stage up to a maximum of 10

(b) The five elements illustrated by Data-Flow Diagrams are:

(1) External Entity ½
(2) System Boundaries ½
(3) Data Flows ½
(4) Data Stores ½
(5) Procedures ½
(2½)

(c) A typical entity model illustrating the relationship between products, customers, orders, invoices and deliveries will look something like this:



Award 6½ marks for the complete diagram less 1 mark for each mistake
(6½)
(20)

Question 3

This is covered in the Technical Update material for 1999 and covers a live topic which is sure to become increasingly significant (viz. Public Finance, January 21-27 2000, p.22-23).

Answers should be in the form a briefing note addressed to the meeting of the working group.

(a) The materials contain two definitions of e-commerce although there may be no one single definition which has universal acceptance. The definitions are:

'Any form of business transaction in which parties interact electronically rather than by physical exchange or direct physical contact'.

'Any activity involving businesses operating and interacting by electronic means, such as on line services'.

For any definition which contains elements of the above *1*

E-commerce may be high level or low level.

High level can include:

- Customer access to catalogues on the internet with payment being arranged online through use of credit cards, followed by postal delivery.

- Suppliers contract with couriers to deliver to customers after orders automatically transmitted to couriers' computers. Detail of delivery and invoicing transmitted back to suppliers.

1 mark for high level plus 1 mark for example/explanation up to a maximum of 2

Low level can include:

- Access to catalogues via the internet followed by faxed or posted order.

- Downloading of software paid for through credit card or posted cheque.

- Advertisements using web pages.

1 mark for low level plus 1 mark for example/ illustration up to a maximum of 2

(b) The aims of e-commerce may be to

Improve business performance through
- Better quality
- Greater customer satisfaction
- Increasing sales
- Better corporate decision making
- Achieving competitive advantage

Improve efficiency through
- Cost reduction
- Improve transaction times through
- High speed, accelerated or real time transactions

1 mark for each point up to a maximum of 5

(c) Possible public sector uses

An example is electronic purchasing in the NHS (Supply Stream system) but there are lots of other possibilities. Students should be rewarded for knowledge of developments and creativity in relation to potential areas of development.

2 marks for listing examples plus 3 marks for a good explanation up to a maximum of 5

(d) Potential problems could include

- Compatibility of systems including financial systems and catalogues
- Internet based problems such as speed and lack of support
- Legal frameworks and contracting issues
- Lack of open standards on e-commerce
- International issues relating to trade barriers, tariffs and taxation
- Security of data needed to effect transaction
- Cultural barriers to use of internet

1 mark for each relevant point up to a maximum of 5

(20)

Question 4

This question refers to sections 6.2 and 6.5 of the OLM.

There are many possible solutions to the scenario and markers should use discretion in awarding marks for valid points other than those outlined below. However, responses should be in the form of a table showing the action to be taken and corresponding explanation (s).

Action to be taken	**Explanation(s)**
Introductory meeting with the heads of the academic schools.	Purpose of devolved budgeting is to allow better and quicker decision making by managers. Opportunity for managers to have more control and responsibility. Reinforce the importance of participation in the budgetary process.
Training sessions for the academic heads to address feelings of hostility and uncertainty.	Reinforce the positive aspects of devolved budgeting. Provide the right skills to enable managers to control and monitor their budgets to the best effect. Minimise 'jargon' and improve communication between finance staff and academic heads.
Highlight/clarify the role of the accountant by means of further training session and/or 'charter' to develop good working relationships with the academic heads.	Role of the accountant is to support and assist by providing high quality information with the minimum of delay. Demonstrate that accountants are flexible and willing to listen.
Improve the 'transparency' of the budgetary process by issuing 'Guidelines' outlining how resources are allocated and procedures for 'bidding' for additional resources. Review the procedure for dealing with under/over spends and bases of resource allocation to minimise potential dysfunctional	Convey as far as possible that the budgetary process is neutral. Need to work together and minimise conflict. Convey to all parties the importance of working together towards the 'goals' of the

effects.	university as a whole.

Review the procedures for allocating support service costs with a view to introducing service level agreements.	Highlight issues of controllable and uncontrollable costs and ensure value for money from support services
Set up academic/support service board to review issues and problems	Willingness to communicate and address issues

1 mark per valid point in any combination up to a maximum of 20

Question 5

This question relates to section 5.5.1 of the OLM

(a)

Issues Budget

	N	A	Z
Units	800	1,000	1,500
Price(£)	560	500	400
Value (£)	448,000	500,000	600,000

1

Production Budget

	N	A	Z
Units to be sold	800	1,000	1,500
ADD Closing stock	40	50	75
	840	1,050	1,575
LESS Opening stock	50	20	40
Units to be produced	790	1,030	1,535

2

Materials Budget

	N		A		Z		
	Unit Number	**Value £**	**Unit Number**	**Value £**	**Unit Number**	**Value £**	**Cost £**
P	3	59,250	3	77,250	2	76,750	25
E	5	158,000	2	82,400	4	245,600	40
R	1	63,200	2	164,800	1	122,800	80
U	10	118,500	8	123,600	6	138,150	15
		398,950		**448,050**		**583,300**	

3

Labour Budget

	N		A		Z		
	Hours	**Value £**	**Hours**	**Value £**	**Hours**	**Value £**	**Cost £**
Assembly	4	31,600	3	30,900	2	30,700	10
Packaging	1	4,740	0.5	3,090	0.5	4,605	6
		36,340		**33,990**		**35,305**	

2

Production Overheads

	N	A	Z	Total	
	£	£	£	£	
Indirect Labour	2,231	2,506	3,263	8,000	
Indirect Materials	1,395	1,566	2,039	5,000	
General Overheads	1,120	1,240	1,640	4,000	
Total	**4,746**	**5,312**	**6,942**	**17,000**	
					2
					(10)

(b)

Budgeted Production Cost Statement

	N	A	Z	Total	
	£	£	£	£	
Direct Costs					
Labour	36,340	33,990	35,305	105,635	
Materials	398,950	448,050	583,300	1,430,300	
Overheads					
IL	2,231	2,506	3,263	8,000	
IM	1,395	1,566	2,039	5,000	
GO	1,120	1,240	1,640	4,000	
Total	**440,036**	**487,352**	**625,547**	**1,552,935**	
					2

Budgeted Profit Statement

	N	A	Z	Total	
	£	£	£	£	
Issues	448,000	500,000	600,000	1,548,000	*(1)*
Cost of Issues	445,606	473,157	611,284	1,530,047	
Net Profit/(loss)	**2,394**	**26,843**	**(11,284)**	**17,943**	

NB COS for N = 440036/790 x 800 = 445606 *3*
The same logic is then applied for A and Z.

(5)

(c) If the objective is to break-even neither large surpluses nor deficits are desirable. The issue price of A and Z should be reviewed.

No selling expenses have been incurred, there may be potential to market the service both internally and externally.

Given the above, some research would need to be undertaken as to the suitability of other issues for treatment in this way; a monitoring system would need to be put in place together with an awareness campaign. Therefore, the cost benefit of extending the range would need to be carefully considered. *5*

(20)

Question 6

(a)

Standard cost of AB

Labour

		£		
Labour				
Skilled	2*£7	14	)	
Unskilled	3*£5.50	16.50	)	½
Materials				
X	12*6	72	)	
Y	1*£22.50	22.50	)	½
Z	2*£30	60	)	
Variable overhead	5*£2.50	12.50		½
Fixed overhead	5*£4	20		½
		217.50		

Budgeted profit and loss account for product AB for quarter ending 30 June 2000

	£	
Actual volume at standard price 1300@£250	325,000	½
Labour		
Skilled	18,200	
Unskilled	21,450	
Materials		
X	93,600	
Y	29,250	
Z	78,000	
Variable overhead	16,250	
Fixed overhead	26,000	
	282,750	1½
Profit	42,250	

Plus 1 mark for presentation of the above statements

(b)

Variance analysis

Sales		
Price	6,500A	*1*
Labour		
Skilled		
Rate	265F	*½*
Efficiency	350A	*½*
Unskilled		
Rate	1,200A	*½*
Efficiency	550A	*½*
Materials		
X		
Price	1,700F	*½*
Usage	8,400A	*½*
Y		
Price	725A	*½*
Usage	3375A	*½*
Z		
Price	7,500A	*½*
Usage	3,000F	*½*
Variable overhead		
Rate	997.5A	*½*
Efficiency	375A	*½*
Fixed overhead		
Expenditure	2590A	*1½*
Volume	1400A	
Efficiency	600A	

Plus ½ mark for presentation

Reconciliation

	£	£	
Budget profit		42,250	
Sales variance - price		6,500A	
		35,750	*1*
Labour			
• Skilled			
– Rate	265F		
– Efficiency	350A	85A	
• Unskilled			
– Rate	1,200A		
– Efficiency	550A	1,750A	
Materials			
• X			
– Price	1,700F		
– Usage	8,400A	6,700A	
• Y			
– Price	725A		
– Usage	3,375A	4,100A	
• Z			
– Price	7,599A		
– Usage	3,000F	4,500A	
• Variable overhead			
– Rate	997.5A		
– Efficiency	375A	1,372.5A	
• Fixed overhead			
– Expenditure	2,590A		
– Volume	1,400A		
– Efficiency	600A	4,590A	
Actual profit		12,652.5	*1*

Plus 1 mark for presentation

Areas for further investigation

Pricing of product

Labour – efficiency of labour force and basis of estimating labour costs

Procurement of materials and possible mix

Overhead recovery and level of activity

1 mark for each relevant point (to include other reasonable points) to a maximum of 3

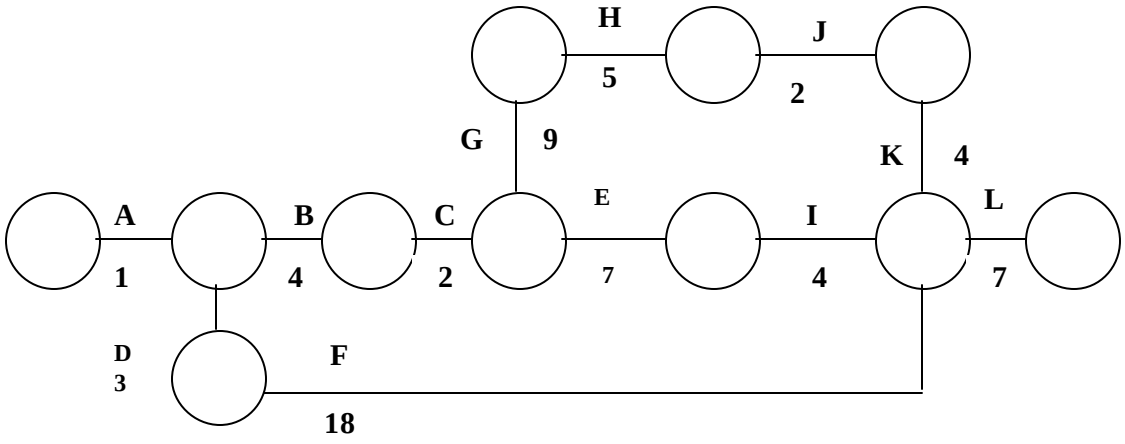
(20)

Question 7

Answers should be set out in a report format and marks awarded for good presentation, including

Correctly addressed and titled report	*1*
Explanation of purpose of report, constraints and options	*1*
Conclusions and recommendations	*2**

Original estimate
Network diagram



(a)

For a well drawn diagram with no mistakes *4*

Critical path ABCGHJKL *1*
Normal project time 34 weeks *1*

Cost estimate	£	
Activities	26,300	*1*
Equipment	15,000	
	41,300	
		1
		(8)

(b)

Options

Reduce B and C (on critical path) by 2 weeks at a cost of £1,000. This gives 32 weeks at £42,300. *2*

Eliminate activity H saving 5 weeks and adding 1 week to E. This gives a new critical path of 29 weeks (although original is now 27) at £42,600. *2*

Activity F should be reduced by 3 weeks (£1,500) which restores the original critical path (27 weeks) at a new cost of £44,100. *2*

Reduce activity K by 3 weeks at a cost of £1,800, changing the critical path again and bringing it down to 26 weeks at a total cost of £45,900. *2*

*It is important that the real alternatives are identified, that is either to be 1 week overtime but on budget or to be within time but at an overspend of £900. This should be recognised in the conclusions and recommendations as should the effects of the changes on increasing criticality of activities.

(20)