

FINANCIAL MANAGEMENT, SYSTEMS AND TECHNIQUES

**December 2005
Certificate stage**

MARKING SCHEME



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Question 1

The question relates to syllabus areas A3 and E1 and are covered in study sessions 18 and 6.

Answers should be in the form of a report to the management board. They should be correctly addressed and headed and the report should be written with a clear structure and in an appropriate style. Ideally the calculations required for part (a) of the question should be contained in an appendix to the main report.

1 mark for a good report, to be taken from the mark allocation for part (a)

(a) Provide a comprehensive set of guidelines for the management of cash balances within Romald using the Miller-Orr model.

The Miller-Orr Model will calculate a target balance, an upper limit for cash balances and an average balance figure. The formulae used for this are:

$$Z = \sqrt[3]{\frac{3 F \sigma^2}{4K}} + L \quad \text{where} \quad \begin{array}{l} K = \text{daily opportunity cost of cash} \\ F = \text{transaction cost} \\ \sigma^2 = \text{variance of net daily cashflows} \\ Z = \text{target balance} \\ H = \text{upper limit} \\ L = \text{Lower limit} \end{array}$$
$$H = 3Z - 2L$$
$$W = \frac{(4Z - L)}{3} \quad W = \text{average balance}$$

In order to use the formulae the values of σ^2 and K must be calculated from the data provided. σ^2 is the variance of the standard deviation σ

$$\sigma = \sqrt{\frac{\sum (x - \mu)^2}{N}}$$

X £	x-μ £	(x-μ) ² £
1,000	725	525,625
2,000	1,725	2,975,625
4,900	4,625	21,390,625
(1,700)	(1,975)	3,900,625
(3,200)	(3,475)	12,075,625
(600)	(875)	765,625
1,150	875	765,625
450	175	30,625
1,250	975	950,625
3,400	3,125	9,765,625
(1,500)	(1,775)	3,105,625
(2,800)	(3,075)	9,455,625
600	325	105,625
1,800	1,525	2,325,625
600	325	
(1,000)	(1,275)	1,625,625
(1,000)	(1,275)	1,625,625
(400)	(675)	455,625
4,950		71,996,250

$$\mu = 275$$

1

3 marks for table resulting in correct calculation. 1 mark for each column

$$\sigma = \sqrt{71,996,250/18} = \underline{2,000}$$

$$\text{Therefore } \sigma^2 = 4,000,000$$

1

$$K = \sqrt[D]{(1+R)} - 1 \text{ where D is number of days and R is rate of return}$$

$$K = 0.00013368$$

1

$$Z = \sqrt[3]{\frac{3 F \sigma^2}{4K}} + L = \sqrt[3]{(3 \times 120 \times 4,000,000) \div (4 \times 0.00013368)}$$

$$Z = 13,913 + 5,000 = \underline{18,913}$$

3

$$H = 3Z - 2L = (3 \times 18,913) - (2 \times 5,000) = \underline{46,739}$$

2

$$W = \frac{(4Z - L)}{3}$$

$$W = (4 \times 18,913 - 5,000) / 3 = \underline{23,551}$$

1

The results of these calculations should be explained as guidelines for cash balance management in Romald. The target balance is £18,913. When cash balances reach £46,739 the balance should be returned to the target figure by investing the surplus. When the balance falls to £5,000 the balance should be increased to the target figure by cashing in investments. The policy should result in an average balance of £23,551.

2 marks for explanation of results of calculation and presentation in the form of guidelines

(b) Explain clearly the benefits and limitations of using the Miller-Orr model.

Benefits include:

- Allows for net cash flows occurring in a random fashion.
- Transfers can take place at any time and are instantaneous with a fixed transfer cost.
- Produces control limits which can be used as basis for balance management.

Limitations are:

- May prove difficult to calculate.
- Monitoring needs to be continuous for the organisation to benefit.

½ mark for each point subject to a limit of 2 marks

(c) Consider the Baumol model as an alternative and provide a reasoned recommendation for which model should be used within Romald.

The Baumol model aims to determine the cash inflow which will minimise the total cost of holding funds. It makes assumptions that cash flows are certain and constant and that inflows are regular and periodic. The steady state assumption is not really appropriate to Romald as the cash flows vary from month to month. Romald is also concerned with investment as well as disinvestment.

1 mark for each relevant point and for a recommendation (for Miller-Orr unless an exceptional argument for Baumol is put forward) subject to a maximum of 3 marks

(20)

Question 2

The question relates to syllabus areas A4 and E2 and is covered in study sessions 19 and 7.

- (a) **Assess the financial implications of offering discount and of using an agency and make an appropriate recommendation. Your calculation of the effects of offering discount should take into account the most probable outcome.**

Current position

The current debtor collection period can be calculated as:
 $7.5m/30m = 91.25$ days

1

Discount of 2% for payment in 30 days

The most probable outcome is

$30\% \times 20\% = 6$
 $40\% \times 40\% = 16$
 $50\% \times 40\% = 20$
A take up of 42%

2

The new debtor collection period would be
 $(42\% \times 30) + (58\% \times 91.25) = 65.525$ days

2

This would reduce the debtors to
 $65.525/365 \times 30m = £5.385m$

1

Giving an interest saving of
 $(£7.5m - £5.385m) \times 8\% = £169,200$

1

Alternatively this can be calculated using the daily interest rate ($0.08/365 = 0.0002191$).

$£30m \times 42\% \times 98\% \times (91.25 - 30) \times 0.0002191 = £164,896$

4

The cost of discount would be
 $2\% \times 42\% \times £30m = £252,000$

2

Which is higher than the interest savings

Use of agency

The agency would reduce debt to £5m
Giving an interest saving of $(£7.5m - £5m) \times 8\% = £200,000$

2

The agency would charge 0.5% of total debtors receipts which is $0.5\% \times £30m = £150,000$.

2

The recommendation based upon the financial analysis is not to introduce discount but to make use of the agency.

1

- (b) Outline the main provisions of the Late Payment of Commercial Debts Act 1998 (as amended) and comment upon whether it might be worthwhile applying these provisions in the case of Hauxwell plc.**

The Act provides the right for all organisations to claim interest on late payment of commercial debts. Late payment is payment that exceeds the stipulated contract period or, in the absence of a contract, a 30 day default period. The interest is calculated using a simple rate of bank base rate plus 8% and it is applied to the numbers of days late. Later amendments have made it possible to also claim reasonable debt recovery costs based upon a specified scale.

1 mark per point subject to a maximum of 4 marks

Hauxwell would have to balance the potential benefits of applying the Act against possible drawbacks. The benefits would include the interest collected and the deterrent effect upon debtors. Against this must be considered the administrative costs of collecting the additional sums and the potential effect on customers which might lead to Hauxwell losing important contracts.

1 mark per point subject to a maximum of 2 marks

(20)

Question 3

The question relates to syllabus area B3 and is covered in study session 2.

(a) Explain what is meant by SDLC and SSADM. What are the main differences between the two approaches?

SDLC is the systems development lifecycle also known as the waterfall model. This is a traditional approach based upon the idea that systems must be developed in a series of steps and that each step needs to be completed before the next one commences.

SSADM is structured systems analysis and design methodology which is a structured approach used throughout the UK public sector.

1 mark for basic explanation of each of the terms

The main differences are:

- The number of stages covered and the areas of work included in each approach. SDLC covers the whole lifecycle whilst SSADM does not.
- Documentation requirements and effect upon standards, communications and maintenance.
- Amount of specialist training required.
- SSADM separates logical and physical systems which can help at times of rapid technological change.
- SSADM may be preferable from a quality assurance point of view.

1 mark for each point subject to a maximum of 4 marks. Other points may be valid.

(b) Is SSADM an answer to all the department's problems? Consider the problems as outlined above. Where might SSADM help and where might it be of little assistance?

The problems outlined in the scenario are:

- Inflexibility.
- Poor standards of documentation.
- Remoteness of IS department.
- Speed of delivery of new systems.
- IS department and systems development approach out of date.

*1 mark for recognition of these problems
(although they are stated quite clearly in the question)*

Each of the above (or other relevant issues) should be related to SSADM and comments made whether SSADM would or would not be of help.

- Inflexibility – SSADM is a structured approach and would not be particularly more flexible. If anything it may reduce the amount of creativity that can be input into development.
- Poor standards of documentation – this is the strength of SSADM and should be a big improvement on the present approach.

- Remoteness of IS department – both approaches tend to reinforce the gap that can exist between users and developers.
- Speed of delivery of new systems – SSADM has the reputation for being comprehensive in its approach and also for being bureaucratic. This will not necessarily lead to a reduction in delivery times.
- IS department and systems development approach out of date – SSADM is perceived as being a more modern approach which has superseded SDLC in many organisations.

1 mark for each issue discussed subject to a maximum of 5 marks

(c) Suggest an alternative approach (to SDLC and SSADM) that could be taken and indicate how this might be of benefit to Mancastle.

Rapid Applications Development (RAD) is an alternative that could be considered by Mancastle (Chaffey also covers Dynamic Systems Development Methodology – DSDM – which is not specifically mentioned in the syllabus but would be valid).

RAD involves the use of prototypes and is much more user orientated. It would assist Mancastle in this respect. It would also be more flexible (responsive to changes in business environment and needs) and the approach is likely to be relatively creative. The whole process of systems development should be speeded up. RAD, however, would not meet the need for better standards of documentation. If anything, documentation standards are likely to be worse.

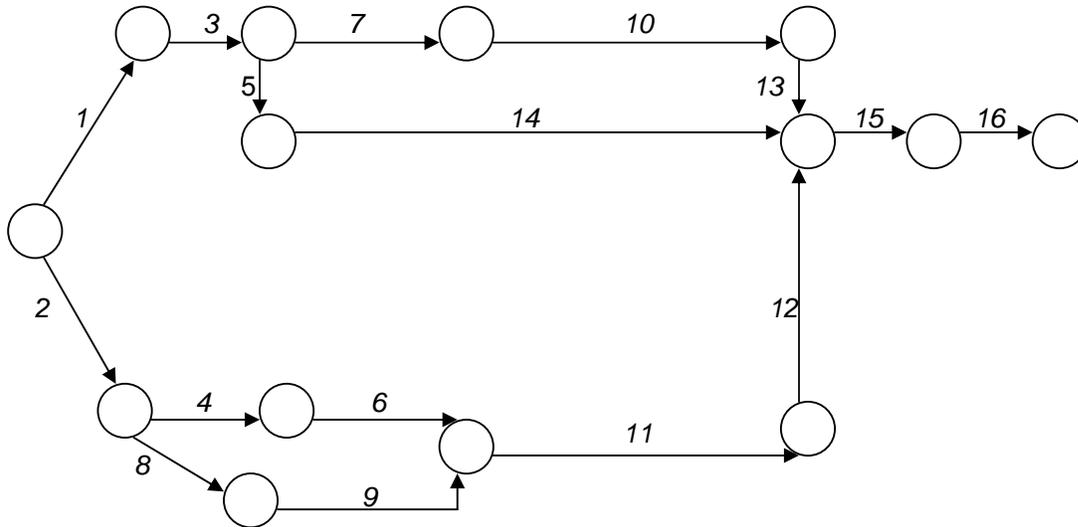
1 mark for each relevant point subject to a maximum of 3 marks

(15)

Question 4

The question relates to syllabus areas D3 and E3 and is covered in study sessions 13 and 9.

(a) **Construct a network diagram for the project and calculate for each of the plans the expected duration and the critical path.**



3 marks for an accurate and correctly drawn diagram

Alternative paths	Plan A – duration (Days)	Plan B – duration (Days)
1 – 3 – 7 – 10 – 13 – 15 – 16	59	43
1 – 3 – 5 – 14 – 15 – 16	47	35
2 – 4 – 6 – 11 – 12 – 15 – 16	58	49
2 – 8 – 9 – 11 – 12 – 15 – 16	67	47

The critical path of Plan A is 2 – 8 – 9 – 11 – 12 – 15 – 16

And for Plan B it is 2 – 4 – 6 – 11 – 12 – 15 – 16

The duration of Plan A will be 67 days and Plan B will be 49 days

1 mark for each critical path and 1 mark for each duration

(b) **Comment on the result of your analysis. Which are the key network activities from a management point of view and why?**

The analysis shows that Plan A will take longer than Plan B and that it cannot be completed within the deadline for the extra funding. The plans each have a different critical path. For Plan A the main difference is that activities 8 and 9 are critical, rather than activities 4 and 6. The most significant activity appears to be activity 9 which takes 12 days longer under Plan A than under Plan B.

There are 3 marks for this section and they should be awarded for comments on the results of the network analysis. At least 1 mark should be reserved for discussion of key activities from a management point of view

- (c) What does a negative NPV mean? How do the NPV figures given contribute to the debate surrounding the choice between Plan A and Plan B?**

The decision rule where two projects have negative NPVs is to accept the lowest negative NPV and it is suggested that this approach is more likely to be found in the public sector. In this case the result of the calculation is inevitable given that the projects will only just clear their running costs and that Project A involves a much higher initial outlay than Project B. The NPV helps in proving a financial input into the decision making process, but there are clearly other factors which also need to be taken into account in this situation.

1 mark for explanation of negative NPV and 2 marks for general discussion of the significance of these figures in the context of choosing between the projects.

- (d) What should Woodland Council do? Give your reasons.**

Students must provide a recommendation, but this must be backed up with an explanation. No marks should be awarded unless there are reasons given. The factors to be taken into account are cost, acceptability to stakeholders, the effect of timing on funding availability and risk.

2 marks for recommendation with reasons.

(15)

Question 5

The question relates to syllabus area B5 and is covered in study session 5.

- (a) What main forms might computer crime take? Identify two pieces of legislation that have been introduced as an aid to combating computer crime.**

Computer crime can be classified into a number of different categories:

- Theft involving the alteration of computer records with the intention of disguising the stealing, usually, of money.
- Theft of services which can include the unauthorised use of the computer information systems.
- Software theft involving making and using unauthorised copies of the organisation's software.
- Data theft can involve stealing sensitive data or making unauthorised changes to computer records.
- The destruction of data and software can be carried out through the creation and dissemination of viruses etc.
- Internet based crime which may involve fraud, identity theft etc.

This is the classification used by Chaffey (OLM p 392-393) but alternative terminology may be used and should be awarded marks where it is valid. 1 mark for each category described subject to a maximum of 6 marks

Legislation which has been introduced to counteract computer crime includes:

- Computer Misuse Act 1990.
- Copyright, Designs and Patents Act 1988.
- Regulation of Investigatory Powers Act 2000.

These are the Acts specifically referred to in the OLM which relate to computer crime. Other legislation could be considered, particularly any relevant legislation post dating the writing of the examination paper.

1 mark for each piece of legislation up to a maximum of 2 marks

- (b) Data protection has been the subject of legislation since 1984 with the original Act being revised in 1998. Briefly outline the provisions of this Act and contrast them with the Freedom of Information Act. Provide an example of a request that could be made under each Act.**

The Data Protection Act (DPA) 1998 is the latest legislation governing the privacy of personal data held by organisations. It sets rules for the processing of personal information and applies to computer records and some paper records. It also sets out the rights of individuals to access information which is held about themselves. This is known as subject access right. Individuals may also apply to the court to have personal details rectified, blocked, erased or destroyed. The may also be a right to compensation.

The Freedom of Information Act (FOI) 2000 gives a general right of access to all types of recorded information held by public authorities subject to certain

exemptions. It covers a whole range of public bodies (as defined by the Act) including government itself. The DPA covers all organisations in the public or private sectors. The FOI extends the right of access from the subject access right contained in the DPA to all types of information, personal and non-personal. Individuals will have the right to be told whether information exists and to receive the information if it does exist. Information need not be in computer form but can consist of 'structured' and 'unstructured' manual records.

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

Appropriate examples should be used which distinguish clearly between the two Acts. A data protection example would probably relate to the right to access personal details held by an organisation and could include education achievements, credit ratings etc. Freedom of information allows for non personal information to be accessed and could include information on decisions made by the organisation in relation to planning, highways developments etc.

1 mark for each relevant example up to a maximum of 2 marks

(15)

Question 6

The question relates to syllabus area C2 and is covered in study session 15.

- (a) Explain what is meant by the finance function and describe four main categories of financial work.**

The finance function consists of the provision made within an organisation for the efficient and effective completion of finance work relevant to the management of the organisation.

Four main categories of financial work can include:

- The processing and recording of financial transactions.
- The production of financial accounting information.
- The production of financial management information and advice for managers operating at all levels within the organisation.
- Assuring adequate internal controls and the quality, relevance and accuracy of financial information.

1 mark for a reasonable definition of finance function (no definition per se is provided in the OLM) plus 1 mark for each of the main categories of financial work. Marks may be given for other relevant categories but not simply for types of work within categories
(5)

- (b) Is the finance function the same thing as a finance department? Give reasons for your answer.**

The finance function and the finance department may be one and the same but there is likely to be some degree of decentralisation. It is more likely that the finance department may have direct responsibility for part of the finance function and an indirect responsibility for other aspects.

2 marks for a reasoned answer

- (c) In order for the finance function to operate efficiently and effectively is it necessary for it to be centralised? What are the alternatives and what do you see as being the main arguments in favour of each approach? How would the role of the finance director vary for each approach?**

There is always likely to be some degree of decentralisation of financial work even where the basic approach is one of having a centralised finance department. Centralisation means that most of the financial work and the resources applied to it will be contained in one central department and will be the direct responsibility of the director of finance (or equivalent). There are a variety of approaches based upon some element of decentralisation which have proven to be efficient and effective.

1 mark for clarification of centralisation and establishing that alternative, decentralised approaches may be valid

The alternative approaches to centralisation are:

- Delegation of functions.
- Devolution.
- Outsourcing.

Delegation of functions involves releasing functions to other departments but retaining control within the finance department. Advantages include:

- Improved knowledge of service area.
- Speedier and more relevant decision making.
- Retention of overall control.

Devolution is where functions are released to other departments which are also given responsibility for the execution of those functions. Advantages include:

- Fits in with devolved management philosophy.
- Closer to decision making and needs of service users.
- Systems and procedures fit in with departmental needs.

Outsourcing is where all or part of the finance function is provided by an external organisation. Advantages include:

- May be more economic and/or efficient.
- Good contracting arrangements would lead to quality control.
- May find more effective ways of providing services.

1 mark for explaining each of the alternative approaches subject to a maximum of 3 marks. Plus ½ mark for each advantage subject to a maximum of 3 marks. Other points could be valid.

The role of the finance director will vary largely in terms of the scale of involvement and control. Delegation will still involve direct control whilst devolution hands over elements of that control to other departments. The finance director can then take a more strategic view of the finance function. Outsourcing will involve an approach based more upon contract management and again being involved more with strategy.

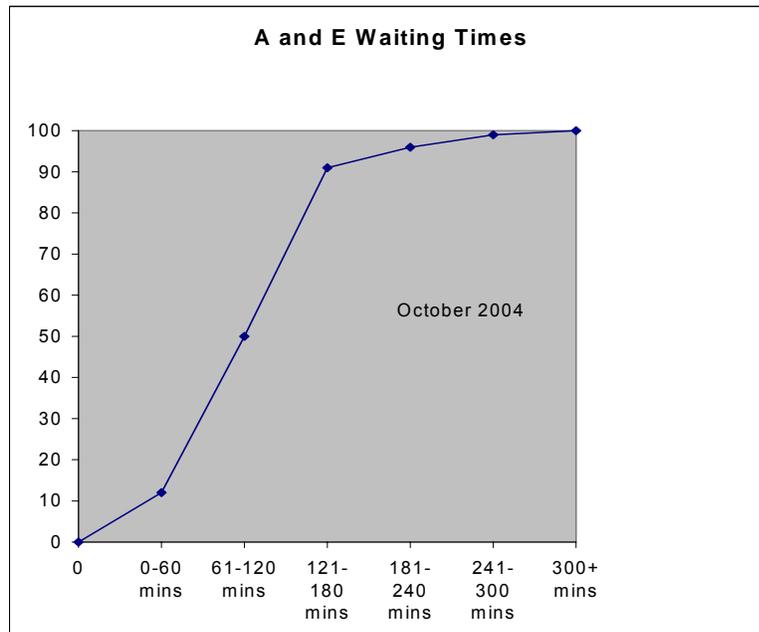
1 mark for reasonable discussion of issues.

(15)

Question 7

The question relates to syllabus area E1 and is covered in study session 6.

- (a) Draw cumulative frequency graphs (ogives) to show the distributions of time in A and E during October 2004 and February 2005 and use the graphs to determine the median and inter-quartile ranges for the time spent in A and E.



A cumulative frequency graph should be drawn for each of the sample results. An example, for October 2004, is shown above. (One graph combining the two sets of data would be acceptable.)

2 marks for each graph drawn accurately and correctly

The median for each sample can be determined graphically. The median will be the $(n + 1)/2$ th. value which in this case will be 50.5 ie half way between the 50th and the 51st. This should be plotted on the graph and the appropriate time noted. The inter-quartile range (IQR) is the difference between the lower quartile and the upper quartile (ie the $(n + 1)/4$ th. value and the $3(n + 1)/4$ th. Value). In this case $25\frac{1}{4}$ and $75\frac{3}{4}$.

The results are shown in the table below

	Median (mins)	Lower quartile (mins)	Upper quartile (mins)	IQR (mins)
October 2004	102	57	134	77
February 2005	108	64	142	78

1 mark for each median, lower quartile and upper quartile figure

(b) How useful are the figures calculated in part (a) and how do they compare to other alternatives as measures of average and dispersion?

The median is a widely used measure of average and represents the actual central value. It is usually considered the most representative value. The IQR may be relatively easy to estimate despite often requiring the use of a graph. It is a reasonable method for comparing two sets of data and gives an indication of the shape of the distribution.

1 mark for some explanation of each

The alternative measures of average would be the arithmetic mean and the mode. Each of these should be defined with some comment comparing it to the median.

1 mark for each alternative covered

The standard deviation is the obvious alternative to the IQR. It should be defined and appropriate comment made.

1

(15)