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ASSESSMENT and QUALIFICATIONS ALLIANCE

General Certificate of Education

Information and Communication Technology 6521

Unit 4 Information Systems within Organisations

Mark Scheme

2008 examination – January series

Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation meeting attended by all examiners and is the scheme which was used by them in this examination. The standardisation meeting ensures that the mark scheme covers the candidates' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for the standardisation meeting each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed at the meeting and legislated for. If, after this meeting, examiners encounter unusual answers which have not been discussed at the meeting they are required to refer these to the Principal Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of candidates' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

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GENERAL GUIDANCE NOTES FOR EXAMINERS

Overall guidelines

1. All examples accepted should be clearly related to the subject area and should not be "generalised" examples.

2. Attention should be paid to ensure that marks are not awarded for simple restating of the question or the stem, often involving the exact same terms.

3. The answers should be providing evidence of more than "man in the street" knowledge of ICT.

4. It should be remembered that scripts could be seen after they are marked and so consistency of approach and correct mechanics of marking are essential.

5. Rules on positioning of ticks and marks are to aid in checking and remarking of scripts.

6. Do not expect the candidate to use the exact wording given in the mark scheme. If you are in doubt as to the correctness of an answer given by the candidate, consult your Team Leader.

7. The answers given in the mark scheme are exemplars. Credit must be given for other correct answers not given in the mark scheme. Please refer to Team Leaders where there is any doubt.

8. One-word answers, where acceptable, will be indicated on the question paper.

9. Where a mark is only available if there is a previous correct response, i.e. a dependent mark, then this will be indicated on the mark scheme.

10. The meaning of ICT-specific words and phrases are as defined by *A Glossary of Computing Terms* (current edition) by the British Computer Society.

Specific marking guidelines

11. The basic rule is one mark, one tick. The tick is to be positioned at the point where the mark is gained in the answer and definitely **not** in the margin.

12. The only figures in the margin should be sub-totals for parts of questions and a final ringed total for a whole question.

13. Where questions are divided into parts a, b, c and so on, and a mark is indicated for each on the paper, a mark should be positioned at the end of the appropriate response in the margin.

14. There should in effect be a mark in the margin at every point there is one on the question paper and a number of ringed totals, which relates directly to the number of questions on the paper.

15. Where a question has only one part, the total for that question should be written once and then again and circled. This allows for easy checking that totalling and transcription of marks is correct.

16. All zero values should be crossed through.

17. All blank spaces should be crossed through with a vertical line through the text space – not in the margin.

18. All writing must be marked as read, either by the presence of ticks or by striking through the script with a vertical line.

19. All blank pages must be crossed through.

20. Where candidates have added to their answers later in the script, the total mark should be indicated as including x from Page y. The total mark should be in the position where the answer starts.

21. The use of the following symbols/signs is acceptable:

a. BOD – where the benefit of the doubt is given for the point the candidate is making. This is generally where poor writing or English is an issue. Its widespread use should be avoided.

b. Underlining of subject specific terminology, which is misused or incorrect e.g. encoding rather than encryption, information rather than data.

c. Underlining can also be used to highlight clearly incorrect statements or the use of a generalised phrase such as quicker, user friendly and so on.

d. An omission sign ^ should be used where the candidate has given insufficient information to gain a mark. This is particularly useful when a teacher or student looks at scripts against a mark scheme.

e. It may be appropriate to indicate where the same point has been covered more than once by an arrow or where a point has been covered in several lines of prose by the use of brackets.

f. The use of letters associated with ticks **may** be used to indicate different areas being marked in a question, particularly to indicate the different bullet points in an essay. THIS WILL BE OUTLINED AT STANDARDISATION.

22. NO other symbols or comments should be used.

23. Markers are responsible for checking

a. The transposition of marks to the front sheet

b. That all work has been marked on each script

c. That all marks for individual questions are totalled correctly

d. That the script total is transferred to the box at the top right of the script.

e. That they **clearly** initial the script, under the total at the top right, so it is possible for the Principal Examiner to identify each markers work.

Information Systems within Organisations

Examiners: the answers given in this mark scheme are exemplars. Credit must be given for other correct answers not given in the mark scheme. Please refer to Team Leaders where there is any doubt.

1	***13.5 Management of change*** *The internal procedures that are used in an organisation may change when a new ICT system is introduced.* *State **two** other ways in which a new ICT system may affect the organisation.*	*(2 marks)*
	Any 2 x 1 • Employees jobs – conditions may change • Working patterns may change • Employees may need training to use the new procedures • The structure of the organisation may have to change • Workforce motivation/attitude	

2	***13.9 Information and the professional*** *Responsibility when accessing and using company data is one topic that is often found in an organisation's ICT Code of Practice.* *Give **five** other topics that are often found in an ICT Code of Practice.*	*(5 marks)*
	Any 5 x 1 • use of software • use of the internet • use of company hardware • use of company time • authorisation paths/levels • security • company's implementation of legislation • penalties for misdemeanours/ disciplinary procedures ** Use of e-mail can be mapped to either Internet or Software (or Time if explained re personal e-mail) if not already given **Not use of data (given)**	

Examiners: the answers given in this mark scheme are exemplars. Credit must be given for other correct answers not given in the mark scheme. Please refer to Team Leaders where there is any doubt.

3	***13.2 Development and Life Cycle*** *Whilst developing a new or improved information system, a formal method of project control is often used.* *Explain the need for:* *(a) clear timescales;* *(b) agreed deliverables;* *(c) approval to proceed.*	 *(2 marks)* *(2 marks)* *(2 marks)*
	a) any 2 from – • so that the project can be monitored (1) • using stage **end dates/deadlines** that are achievable (1) • that both parties have agreed to (1) • so that the project is completed **on time** (1) b) any 2 from - • so that the users' requirements are met (1) • with documents/system (1) • with agreed **content** (1) • produced to agreed **standards** (1) c) any 2 from – • to ensure the user is satisfied with work to date (1) • by getting sign off for a stage from the user/management (1) • giving the go-ahead for the project to continue to the next stage (1)	

Examiners: the answers given in this mark scheme are exemplars. Credit must be given for other correct answers not given in the mark scheme. Please refer to Team Leaders where there is any doubt.

4	***13.4 Information*** *One way of classifying information is by its type. Examples of types of information are disaggregated, aggregated and sampled.* *Give **three** other ways of classifying information, and give an example for each one.*	*(6 marks)*
	1 for classification, 1 for example to 3 x (2,1,0) **NOT Type (given)**	

Ways	Example
Nature	quantitative, qualitative, formal, informal, structured, unstructured
Time	historical, current, future
Frequency	real-time, hourly, daily, monthly
Source	internal, external, primary, secondary
Form	written, visual, aural, sensory
Use	planning, control, decision-making
Level	operational, tactical, strategic

Examiners: the answers given in this mark scheme are exemplars. Credit must be given for other correct answers not given in the mark scheme. Please refer to Team Leaders where there is any doubt.

5	***13.8 Project Management and effective ICT teams*** *ICT projects are often sub-divided into tasks and allocated to ICT teams.* *Describe **four** characteristics of a good ICT team.*	*(8 marks)*
	1 for characteristic (c) 1 for description/expansion/example (e) to any 4 x (2,1,0) • Leadership (c) as appropriate management and project control will encourage (motivate) the team to work together /in an organised manner/effectively/ will ensure deadlines are met(e) • Appropriate allocation of tasks (c), so that each team member is asked to work to their strengths/will ensure each task is completed in the best way possible (e) • Adherence to standards (c), so that anyone would be able to continue the work in an emergency/others to do with professional or methodical ways of working e.g. appropriate documentation is produced and kept up-to-date/as by following set procedures the team will ensure that nothing is missed by mistake (e) • Monitoring of progress (c), to ensure that their part of the project completes to schedule/to ensure that the work has not been underestimated/ to ensure that each team member is working at the appropriate pace/to ensure that all team members are doing what they are supposed to do to the right level of effectiveness (e) • Monitoring of costs (c), to ensure that money has not been misused/ to keep within the customer's budget/ to be able to report back to the overall project manager (e) • Control (over change) (c), to make sure that their part of the project is delivering only what is required/ to allow for change to be incorporated or left to a later phase/ to ensure their part of the project is delivered to original schedule (e) • Balance of team (c) People from many departments work together effectively/e.g. programmers, analysts, users and … work together (e) • Good internal communication skills (c) people who have clear <u>internal</u> communication (e) • Good communication skills (c) Someone/people who are able to communicate well with people <u>outside</u> the team/ability to liaise with other teams in the project (e)	

Examiners: the answers given in this mark scheme are exemplars. Credit must be given for other correct answers not given in the mark scheme. Please refer to Team Leaders where there is any doubt.

6	***13.7 Support*** *Name and describe **three** methods of user support that are available with industry standard packages. For each method of support, give a different example of a type of user for whom it would be suitable.*	*(9 marks)*

1 for method (M), 1 for describing/extending (E), 1 for type of user (U) to 3 x (3,2,1,0)

The E marks are examples only – others are equally valid

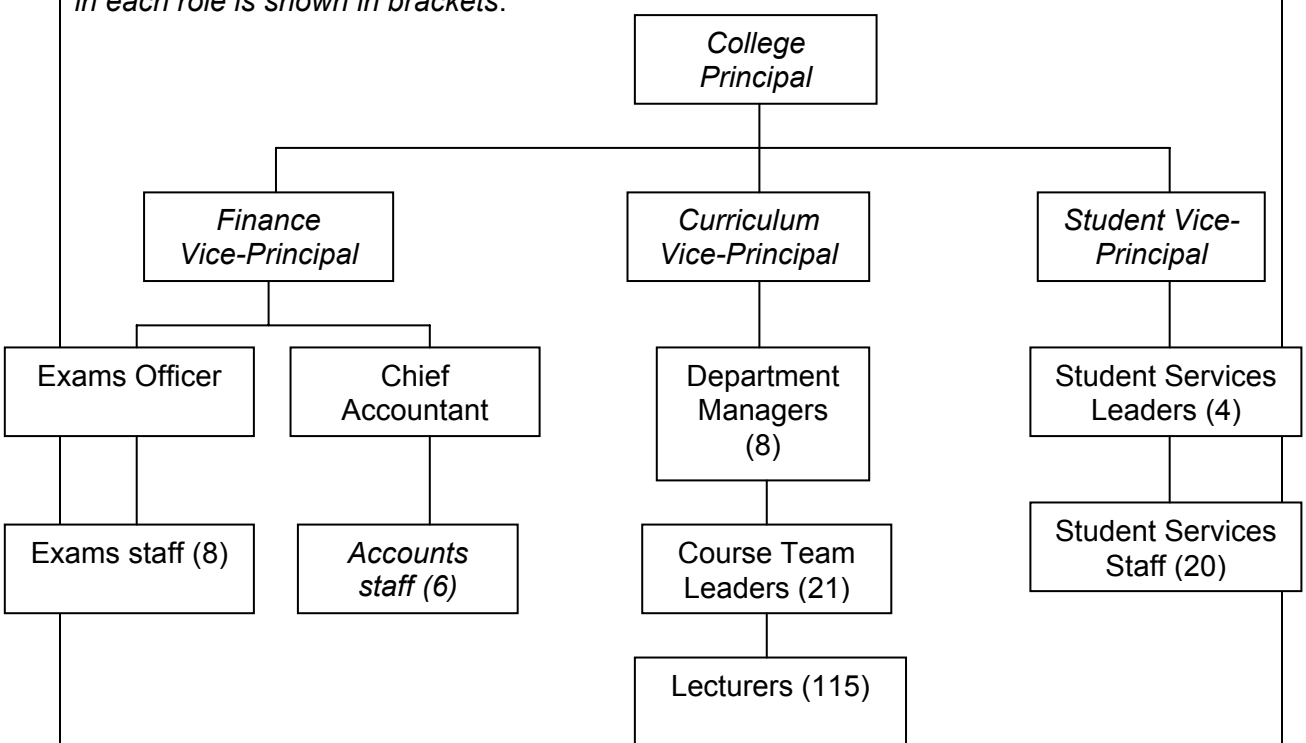
User marks
Type of user needs to be qualified in terms of the method of support given. It is not enough to simply say "novice", "expert" "job title" or "operational etc" without referring to how or why they would choose that method. Use what has been written for the example/description mark to help decide in some cases.

Method (M)	**Description/ /expansion (E)**
(External) Phone line/Help desk	someone technical to guide/help / supplier service
On-site support technician or Help desk	to be on-hand to solve problems
Call-out technician	Phone and will come on-site
User guides/ articles/ utilities/ books/ documentation	people can work at own pace/ have instructions at side/ look it up for themselves
Communications systems/ bulletin boards/ internet site/ intranet *(passive)*	more able users can help themselves by reading the information
On-line technical help *(active)*	Get specific queries solved by a technical expert/via e-mail
E-mail updates	Subscribe to service/arrives automatically
Existing User base	Contact by meeting or phone
Help within package	Context-sensitive or using wizard etc

Examiners: the answers given in this mark scheme are exemplars. Credit must be given for other correct answers not given in the mark scheme. Please refer to Team Leaders where there is any doubt.

7 ***13.1 Organisation Structure / 13.3 Information flow***

(a) Figure 1 *below shows the hierarchy of a further education college. The number of staff in each rôle is shown in brackets.*



(number of staff of each type is shown in brackets)

*(a) For each of the following levels of staff, give **two** examples from the hierarchy shown in the diagram of someone who would be using information from college ICT systems at that level:*

(i) strategic; *(2 marks)*

(ii) tactical; *(2 marks)*

(iii) operational. *(2 marks)*

(b) Information flows around an organisation in a variety of ways, using both formal and informal methods.

*For the college shown in **Figure 1**, suggest a method, using ICT, of providing the following information to the intended recipient(s), stating whether this method is formal or informal.*

(i) Monthly attendance figures for the whole college, to the Student Vice-Principal *(2 marks)*

(ii) Weekly attendance figures for individual students, to Course Team Leaders *(2 marks)*

(iii) Annual income and expenditure, to the College Principal *(2 marks)*

(iv) Date of the annual college Open Day, to all college staff *(2 marks)*

(v) Details of a student disciplinary action and its outcome, to the Student Vice-Principal. *(2 marks)*

(a)

i) Any 2 of:
- College Principal
- Finance V-P
- Curriculum V-P
- Student V-P

ii) Any 2 of:
- Exams Officer
- Chief Accountant
- Department Manager
- Student services Leader
- Course Team leader

iii) Any 2 of:
- Exams Staff
- Accounts Staff
- Lecturer
- Student services staff

(b) Examples only; credit any appropriate suggestion - 1 for example, 1 for correctly identifying if it is formal or informal

These are dependent marks – if no example/method then cannot give the words Formal or Informal

i) Presented as an aggregated set of graphs (1) – formal (1)
Picked up off the system (1) – informal (1)

ii) By word of mouth from Dept. manager (1) – Informal (1)
Regular report from the system, passed to CTL (1) – Formal (1)

iii) Annual report in set format (1) – formal (1)

iv) In college staff newsletter, sent to all staff home addresses (1) – Formal(1)
Printed notice/poster pinned on notice board in staff rooms(1) – informal(1)
e-mail/text/sms containing the date/sent to all staff (1) – Informal (1)

v) Filled in report sent by post/e-mailed/filled in on secure intranet (1) –Formal(1)

NOTES
- e-mail is generally an informal method unless it is somehow shown as a regular occurrence or is in a set of procedures
- Intranet is a formal method
- Report/Memo/Presentation must be qualified in terms of what it contains, how it looks, or where it is derived from (a database/info sys etc

Examiners: the answers given in this mark scheme are exemplars. Credit must be given for other correct answers not given in the mark scheme. Please refer to Team Leaders where there is any doubt.

8 ***13.6 Disaster Recovery***

A firm of solicitors deals with personal injury claims and stores sensitive personal data on its ICT systems. The firm has been advised by an ICT consultant to look at the security of its ICT systems, to carry out a risk analysis, and then to plan how to reduce the risks.

(a) Explain what is meant by risk analysis. *(3 marks)*

*(b) State **three** different potential threats to the firm's ICT systems, give a counter-measure for each one and say why or how it could counteract the threat.* *(9 marks)*

*(c) Describe **three** of the criteria that could be used to decide on a disaster contingency plan for the firm.* *(6 marks)*

(a) any 3x1

- identify each element of an information system (1)
- place a value – to the business/organisation – on that element (1)
- identify any potential threats to that element (1)
- the likelihood of the threat occurring (1)
- put a value against each (1)
- calculate an overall Risk figure (1)
- make contingency/disaster recovery plan based on the result (1)

(b) 1 for threat(**t**), 1 for counter-measure(**c**), 1 for description of why/how it could counteract the threat(**e**). Any 3 x (3,2,1,0)

- Candidate does not need to have the threat to get the other two marks; however, if a valid threat is offered, then no credit for a non-matching countermeasure and expansion.
- Two countermeasures for one threat can gain both (c) and (e) marks

Threat	**Counter measure** *(examples)*	**Example/expansion** *(examples)*
Natural disaster– e.g. flood, earthquake	backup kept off-site; hardware kept above flood-line;	so that a safe copy is held and system can be reloaded;
Electrical surge/power loss	UPS/ RAID/ off-site duplication/ Mirror	as above
Physical – e.g. theft	use locks etc	prevent easy entry
Personnel – e.g. accidental overwrite	have procedures	trained staff less likely to make mistakes
Hardware – e.g. disk crash	have duplicate system/ hot site arrangement	so that system can be up and running a.s.a.p

Communications breach – e.g. hacking in	firewalls, encryption, passwords	to lessen ability to see/steal/tamper with data
Virus – e.g. Trojan	anti-virus software	to stop files getting infected
Data errors, inaccurate data in system	verification and validation	pick up data errors before they get into the system

(c) Any 3 x (2,1,0) **(c)** for criteria, **(e)** for description/extension/example

- Scale of the organisation and its ICT systems (c) Volume of data/Size of the systems (e)
- Nature of the operation / The importance of data/information held (c), for example… (e)
- Timescale until the system is up and running (c) as if there is a delay it could harm the business (e)
- Costs of recovery options relative to "value" of systems (c), don't need to spend money on over-the-top recovery option when a simpler option will work as well for the situation (e)
- Perceived **likelihood** of disaster happening, (c) , based on risk analysis (e)

***NOT**: Any of the contents of the recovery plan (eg how to set up, reciprocal site, who does what or anything to do with back-ups).*

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9	***13.1, 13.3, 13.4 ++*** *"An organisation needs information like a human being needs blood."* *"Information flows up and down the veins and arteries of an organisation."* *Discuss the above statements with reference to:* • *the organisational structure and style of an organisation* • *the importance of data collection, input and processing* • *the dissemination of information* • *the rôle of the people involved with creating and using information.* ***The quality of written communication will be assessed in your answer.***	*(20 marks)*
	Continuous prose is expected for this answer. A mark is awarded for a discussion of a topic, not just the words shown below. Expansion or use of relevant example may get a second mark for the same topic. Up to 5 marks in each of the 4 areas below, plus up to 3 for any generically good points made about information in an organisation that does not fall under any other coding. ***To a maximum content mark of 16.*** Coding - **S** for structure and style **D** Data collection, inputting and processing **I** for dissemination of information **R** for role of people **G** for general points **<u>Structure and style (S)</u>** • Hierarchical and Flat/Mesh • Levels and layering (S, T and O) • Mechanisms for information flow (Formal/Informal) • Management style (Dictatorial/Collaborative) • Methods for planning and decision making • Ethos/culture • Organisational arrangement (Geographical/Functional/Centralised/Decentralised etc) • Use of information in decision-making process	

Data Collection, Input and Process (D)

- Data transcription/translation
- Data accuracy
- Data Collection
- Methods of data input
- Control and audit in data capture
- Validation/Verification
- Types of processing
- Data processing systems

Dissemination of Information (I)

- Internal and external information requirements
- Characteristics of good information and delivery
- Advantages and disadvantages of good information in context
- Methods of presenting information
- Audience for information
- Classifications of information

Role of people (R)

- Different levels/different needs
- Matching detail to user
- Project teams providing info systems
- Analysts researching requirements
- Developers creating systems/liaising with users
- Business manager involvement in creation
- IT managers
- Network manager

4 marks	The candidate has expressed complex ideas clearly and fluently. Sentences and paragraphs follow on from one another smoothly and logically. Arguments will be consistently relevant and well structured. There will be few, if any, errors of grammar, punctuation and spelling.
3 marks	The candidate has expressed moderately complex ideas clearly and reasonably fluently through well-linked sentences and paragraphs. Arguments will be generally relevant and well structured. There may be occasional errors of grammar, punctuation and spelling.
2 marks	The candidate has expressed straightforward ideas clearly, if not always fluently. Sentences and paragraphs may not always be well connected. Arguments may sometimes stray from the point or be weakly presented. There may be some errors of grammar, punctuation and spelling, but not such as to suggest a weakness in these areas.
1 mark	The candidate has expressed simple ideas clearly, but may be imprecise and awkward in dealing with complex or subtle concepts. Arguments may be of doubtful relevance or obscurely presented. Errors in grammar, punctuation and spelling may be noticeable and intrusive, suggesting weaknesses in these areas.