AM 19/I.12m

MATRICULATION AND SECONDARY EDUCATION CERTIFICATE EXAMINATIONS BOARD
UNIVERSITY OF MALTA, MSIDA

MATRICULATION CERTIFICATE EXAMINATION
ADVANCED LEVEL
MAY 2012

SUBJECT:	INFORMATION TECHNOLOGY
PAPER NUMBER:	I
DATE:	28th May 2012
TIME:	4.00 p.m. to 7.00 p.m.

DIRECTIONS TO CANDIDATES

A total of six questions must be attempted; three from Section A and another three from Section B.

SECTION A: INFORMATION SYSTEMS

Answer ***the first question in this section*** and any other ***two*** questions.

QUESTION A1.
This question is compulsory. Answer all parts.

a) This part is on Data and data capture.
   i) Identify ***one*** frequently employed data capture method. Give ***one*** advantage and ***one*** disadvantage of such method.
   ii) What is a *smart card*? Give a brief example of where it can be employed.
   iii) What is the alternative to capture data if no electronic method is employed? Give any ***two*** disadvantages of this method. **[6 marks]**

b) This part is on Data validation and verification.
   i) Give a brief definition of *validation* and *verification*.
   ii) Identify any ***two*** types of errors that are commonly found during data validation and verification? Give any ***one*** brief example of each.
   iii) How does accuracy and validity fit in with verification of data? Give ***one*** example. **[6 marks]**

c) This part is on Data loss and recovery methods.
   i) Identify, and briefly explain, ***two*** alternatives for the provision of backup facilities as part of such a disaster recovery plan.
   ii) Identify, and briefly describe, ***two*** criteria used to select a contingency plan in case of such a disaster. **[4 marks]**

d) This part is on Security of data.
   i) Name ***two*** threats to the security of data and give an example of each.
   ii) Identify, and briefly explain ***one*** counter measure to contain the ***two*** threats named in d)i. **[4 marks]**

Answer ANY TWO of questions A2, A3 and A4

QUESTION A2

This question is about Computer Networks in organizations.
Briefly define the term *network*.

a) Identify and briefly explain any ***two*** types of networks. **[5 marks]**

b) Explain ***one*** way used to connect a computer to a network.
Identify ***two*** types of connections to link different networks together. [**5 marks]**

c) Briefly explain the structure of the Internet.
Identify and sketch any ***two*** other network structures. **[5 marks]**

QUESTION A3

This question is about aspects of *HCI*.

a) Briefly explain the term *HCI*.
Identify and briefly explain any ***two*** psychological factors that are needed to design good software. **[5 marks]**

b) Name any ***two*** main types of memory associated with HCI and explain the relevance of any ***one*** of them when designing software. **[5 marks]**

c) What is the alternative to a GUI?
Identify any ***two*** advantages and any ***two*** disadvantages of a GUI. **[5 marks]**

QUESTION A4

This question is about Information systems life cycles.

a) Briefly explain the term *information systems life cycle*.
Identify and give an overview of any ***one*** of these life cycles. **[5 marks]**

b) Give any ***three*** reasons why an organisation should introduce a new information system. Briefly explain any ***one*** of these reasons. **[5 marks]**

c) Name an alternative information systems life cycle other than that identified in a).
Briefly explain any ***two*** benefits of employing this particular life cycle. **[5 marks]**

SECTION B: HUMAN COMMUNICATION & BUSINESS ORGANISATION

Answer ***the first question in this section*** and any other ***two*** questions.

QUESTION B1

This question is compulsory. Answer all parts.

i) Briefly describe the concepts of *authority*, *responsibility* and *delegation*. **[5 marks]**

ii) Differentiate between a *Co-operative society* and a *Public Corporation.* **[5 marks]**

iii) Outline the various functional areas used in organisations. **[5 marks]**

iv) Explain *five* differences between *profit* and *non-profit* making organisations. **[5 marks]**

Answer ANY TWO of questions B2, B3 and B4

QUESTION B2

In what ways does understanding of information in organisations contribute to more effective management? Is the 'grapevine' (gossip) of any value to a manager? How does it differ from the official channel of communication? **[15 marks]**

QUESTION B3

Why does a company need to spread information to the outside world? Describe any ***five*** different ways and means of how to spread information to current and future customers. **[15 marks]**

QUESTION B4

Differentiate between *Upward* and *Downward Communication*. Describe any ***five*** different methods that a company can use in order to communicate with its employees. **[15 marks]**

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MATRICULATION CERTIFICATE EXAMINATION
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MAY 2012

SUBJECT:	INFORMATION TECHNOLOGY
PAPER NUMBER:	II
DATE:	30th May 2012
TIME:	4.00 p.m. to 7.00 p.m.

DIRECTIONS TO CANDIDATES

A total of six questions must be attempted; three from Section A and another three from Section B.

SECTION A: SOFTWARE

Answer ***the first question in this section*** and any other ***two*** questions.

QUESTION A1.
This question is compulsory. Answer all parts.

a) This part is on Software Categories.
   i) Identify ***three*** differences between the two main software categories.
   ii) Briefly explain the differences in a)i.
   iii) Define *generic purpose software*.
   iv) Identify, and briefly explain the use of any ***two*** types of software that are considered as generic purpose. **[6 marks]**

b) This part is on System Software.
   i) Define *system software*.
   ii) Identify any ***two*** types of system software.
   iii) Briefly explain one of the types identified in b)ii. **[6 marks]**

c) This part is on Application Software.
   i) Define *application software*.
   ii) Identify and explain any ***two*** criteria that should be evaluated when deciding to purchase a software package. **[4 marks]**

d) This part is on Software Evaluation.
   i) Benchmark tests fall into the software evaluation category. What happens during benchmarking?
   ii) Name any ***two*** sections that normally form part of an evaluation report of a software package. **[4 marks]**

Answer ANY TWO of questions A2, A3 and A4

QUESTION A2

This question is on Internet-Related Software.

a) What does *ISP* stand for?
What is the role of the *ISP*?
Identify two services provided by an *ISP*. **[5 marks]**

b) Identify any ***five*** components or tasks required to start advertising your products or services over the Internet? **[5 marks]**

c) Identify any ***three*** potential security breaches over the Internet.
Propose a solution to any ***two*** of these problems. **[5 marks]**

QUESTION A3

This question is on Database Systems.

a) Identify any ***five*** tasks that are performed within a database package for which corresponding tools are generally available. **[5 marks]**

b) Explain how any ***one*** of the tasks identified in a) is accomplished with the database package tools available. **[5 marks]**

c) Apart from a *Distributed database system*, name another type of database system.
Give a brief definition for both. **[5 marks]**

QUESTION A4

This question is on Operating Systems.

a) What is the purpose of an *operating system*?
Identify ***three*** types of operating systems. **[5 marks]**

b) Name any ***five*** components of an operating system together with their corresponding function? **[5 marks]**

c) Identify any ***two*** ways how users can interact with an operating system.
Give ***one*** example and briefly explain ***one*** of each of the two ways identified above of how users can interact with an operating system. **[5 marks]**

SECTION B: PROGRAMMING TECHNIQUES AND SYSTEM DEVELOPMENT

Answer ***the first question in this section*** and any other ***two*** questions.

QUESTION B1.

This question is compulsory. Answer all parts.

a) This part is on System Design and Development
   i) Identify any ***two*** important stages which preceed and follow, the *design stage* as part of the entire system development life cycle.
   ii) Why do these ***three*** stages strategically follow each other?
   In which of these stages is the user interface involved?
   iii) Identify any ***two*** tasks that happen during the *design* stage of system development. **[6 marks]**

b) This part is on the ERD.
   i) Define an *ERD* without making use of the words *entity* and *relationship*.
   ii) Name any ***two*** possible types of relationships between entities.
   iii) Give a simple example of a relationship between entities (both descriptive and diagrammatic) as part of an ERD. **[6 marks]**

c) This part is on Structured Techniques for Systems Design.
   i) Identify any ***two*** structured techiques that can be employed to design a system.
   ii) Briefly describe ***one*** of the structured techniques identified above. **[4 marks]**

d) This part is on Testing Strategies.
   i) Does the choice of the testing strategy fall in the design stage?
   ii) Name any ***two*** testing strategies. **[4 marks]**

Answer ANY TWO of questions B2, B3 and B4

QUESTION B2

This question is on Problem Solving Techniques.

a) Would you consider *searching* and *sorting* to be part of problem solving techniques?
   Briefly describe any ***two*** practical situations where *searching* and *sorting* can be individually employed. **[5 marks]**

b) How does a *file organisation structure* employed in a system, influence the choice of a problem solving technique?
   Give a scenario where a specific file operation is best employed with a specific file organisation. **[5 marks]**

c) A librarian would like to change the information about the location of a book which has been moved to a different shelf. Use pseudo-code to express the operation that needs to be performed. **[5 marks]**

QUESTION B3

This question is on Software System Maintenance and Software Evaluation.

a) Identify and briefly explain ***one*** type of maintenance.
How does good technical documentation for a software system make it easier to maintain? **[5 marks]**

b) Identify any ***three*** criteria useful for evaluating software. Briefly explain each one. **[5 marks]**

c) How does the use of structured programming techniques to develop a software system make it easy to maintain? **[5 marks]**

QUESTION B4

This question is on Structured Programming Techniques.

a) Name any ***two*** approaches adopted in structured programming techniques used to solve a specific problem.
Describe a simple problem scenario for solving. Apply any ***one*** of the approaches named above. **[5 marks]**

b) Name ***three*** types of constructs which are associated with structured programming techniques.
Give an example of ***two*** techniques used to express any of the constructs named above. **[5 marks]**

c) Using pseudocode or a programming language of your choice, implement a simple sorting algorithm and explain each step. **[5 marks]**