**SL Unit 1** **- System Fundamentals**  
Test 1

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| **Question 1** | | | |
| Objectives: | 1.1.5, 1.1.6,1.1.9,1.2.5, 1.2.8 | Exam Reference: | Question May-16 11 |

1. An examination office of a university must securely store students’ examination papers and their grades. The office keeps the documentation of past students for two years. After two years the office only stores the student grades. All documentation of current students is frequently accessed for other operations and the volume of the data increases quickly.  
     
   To better support its operations, the office is creating a new system to provide this storage.
2. Identify **two** aspects of the data that need to be taken into account during the planning

of the new system. [2]

*Award up to* ***[2 max]*** *for* ***two*** *aspects:*

The type of access needed;

For example read only/read write/online or offline;

Access rights;

For example, data available only for administrators / different permissions for students;

Frequency of access;

Some data (of non-current students) are not frequently accessed and can be archived;

Other data (of current students) are frequently used, subject to a variety of operations;

Quantity/size of the data;

For example should not exceed storage capacity of the new system;

Type/nature/format;

For example incompatibility issues;

1. Describe how direct observations on the current system may provide information to

help propose a suitable new system. [3]

*Award up to* ***[3 max]****.*

Quick/first hand/realistic information on data/software/hardware/users/procedures in the current system; Help better understand positive and negative features of the current system (for example problems in accessing or validating data/user errors/security issues, etc.);

Which can be used when specifying requirements of the new system (keep/improve positive and change negative features);

A prototype of the new system is created to present to the examination office.

1. Describe the purpose of this prototype. [3]

*Award up to* ***[3 max]****.*

Prototype is used to ensure all essential functions/operations of the system are present/meets the needs of the users;

Prototype is used to speed up development process;

Positive user’s feedback helps in refining the acceptable prototype in order to develop the complete system/product;

Or else a further prototype should be created in order to develop the satisfactory system/product;

The examination office needs to upgrade the computing resources for their operations, and  
 this will require data migration.

1. Discuss two possible problems that may occur during data migration. [4]

*Award* ***[1]*** *for identifying a problem and* ***[1]*** *for a discussion, for* ***two problems****, up to* ***[4 max]****.*

Data loss/data corruption;

When moving data, from one storage device to another (via network/ cables or transferred by people), data could be corrupted/lost and not useful anymore;

Incompatibility of data formats;

Necessary to translate from one format to another, to be able to use the data in the new system which causes delays/performance issues in business/office operation;

1. Outline **one** economic aspect that the examination office needs to take into account to

support parallel running

*Award up to* ***[3 max]****.*

***Example answer 1***

Two systems are running simultaneously so that operations are not disrupted;

This is a costly operation;

Because both systems and all their resources should be maintained / More staff should be hired;

***Example answer 2***

Safe way of validating the new system;

Running two systems could be cheaper;

Than losing all data in case of failure; **[3]**

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| **Question 2** | | | |
| Objectives: | 1.1.9 | Exam Reference: | May-16 2 |

1. Outline the use of a failover system.

*Award up to* ***[2 max]****.*

A failover system is a standby/redundant system;

Which is used to eliminate/reduce the impact on users/owners;

By automatically taking over if the primary system suddenly becomes unavailable;

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| **Question 3** | | | |
| Objectives: | 1.1.13 | Exam Reference: | Nov 17 11.e |

1. An application package used in an office includes a word processor. A secretary uses the  
   word processor to create a text file. The text file is automatically saved at regular periods while being edited. All files created in this office contain information important to the business.  
     
   Outline the security measures that should be taken to prevent data loss. [2]

*Award up to* ***[2 max]****.*

Offsite data storage;

Make backups regularly/periodically/frequently;

Prevent physical damage to the computers / Keep equipment in safe and dust free

places / Protect equipment from static electricity that can erase data or

damage components / Protection during lightning and electrical storms;

***Note:*** *Accept any reasonable examples, but there should be more than one.*

*The focus of the question is on data loss, and not in relation to*

*security/hacking.*

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| **Question 4** | | | |
| Objectives: | 1.1.7 | Exam Reference: | May-17 1 |

1. Describe the use of beta testing. [2]

It is when an application/program is tested/ to get feedback (for errors/improvements);

By releasing it to the general public/users/stakeholders before final release;

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| **Question 5** | | | |
| Objectives: | 1.1.14 | Exam Reference: | May-17 3 |

1. Identify two reasons for releasing a software update. [2]  
     
   *Award up to* ***[2 max]****.*

To patch any vulnerabilities/bugs/cyberspace threats;

To provide improved functionality/new functions/usability/maximize efficiencies;

To generate income for the software company/to innovate and stay ahead of other software companies;

To ensure compatibility with other (updated) technologies;

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| **Question 6** | | | |
| Objectives: | 1.2.14 | Exam Reference: | Nov-17 4 |

1. Identify **one** method of inputting data that can improve the accessibility of a computer  
   system for some users. [1]  
     
   Award up to [1 max]

Text-to-speech;

Voice recognition;

Braille keyboards;

Touch screen;

Input from scanner;

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| **Question 7** | | | |
| Objectives: | 1.2.2 | Exam Reference: | Nov-17 3.a.b |

1. In the context of a networked world, state the role of
2. A client [1]  
     
   A piece of computer hardware or software that accesses a service made

available by a server /

The role of a client is to access a service made available by a server by sending

a request for service;

Note: the term client is to be understood only from the computing perspective, ie

this is not a human.

1. A server [1]

A program/host computer that awaits and fulfills requests from client programs (in

the same or other computers) /

The role of a server is to fulfill requests from client programs (which can reside in

the same or in other computers)

Note: the term server is to be understood only from the computing perspective,

ie this is not a human.