**COMPUTER STUDIES – 451/1 (THEORY)**

**FORM 3 END TERM 2 EXAMINATION – MARKING SCHEME**

**TIME: 2HOURS**

**SECTION A (40 MARKS)**

1. Describe the functions of the following computer hardware components. [4mks]

 i) Mouse

* *This is an input device that works in conjunction with a pointer on the screen. It is used for selecting and other input functions.*

ii) Scanner

* *This is an input device that works with optical technology to capture data (text and images.*

2. a) The diagram below represents the essential features of a computer system. Study the diagram and answer the questions that follow.

A

B

Output Device

C

D

Secondary Storage

 i) Name the components [4mks]

 A – *Input*

 B - *Control unit*

 C– *Arithmetic Logic Unit*

 D– *Primary storage*

 ii) On the diagram above, indicate the direction of data flow using arrows. [3mks]

3. Name the three types of buses in a computer system. [3mks]

* *Data bus*
* *Control bus*
* *Address bus*

4. State any two features of a user-friendly program. [2mks]

* *Relatively easy for user to start using the software*
* *Amount of effort and information required of the user to get the system complete required tasks should be kept minimum.*
* *Systems should be self-contained so that the user is not forced into accessing manuals or dealing with things be kept out the system.*
* *System should be able to adjust to different levels of expertise between users, and as users grows in competence*
* *User should be made to feel in control of what is going on.*
* *- Easy to update*
* *- Easy to install*
* *- Easy to navigate*
* *- Easy to remove*
* *- Easy to troubleshoot*
* *- Effective error handling*

5. i) Explain why a value such as 6111233355566 may be displayed as ######## when typed in a cell on a spreadsheet. [2mks]

* *The value is too large to be displayed in the current cell width.*

ii) How can the problem in (i) above be corrected? [1mk]

* *Expand the cell/column width*

6. Differentiate between COM ports and LPT ports. [2mks]

* *COM port also known as a serial port transmits data bit by bit.*
* *LPT port also known as a parallel port transmits multiple bits simultaneously at a time.*

7. Explain the following software terms. [4mks]

 a) Portability

* *Ability of software to work/function in several computer hardware and OS platforms.*
* *Ability of software to be installed in more than one computer.*

 b) Modularity

* *Ability of software to be broken down into several sections for easier understanding and maintenance.*

8. Explain three ways in which computer viruses are spread from one computer to another. [3mks]

* *Through using contaminated secondary storage devices*
* *Opening of e-mail attachment without scanning for virus*
* *Downloading and opening of infected files from the internet*
* *Updating of software through infected networks*

9. Differentiate between cropping and sizing as used when working with graphics. [2mks]

* *Cropping is the process of trimming/cutting/hiding vertical or horizontal edges of an object/picture while sizing is the process of enlarging/expanding or reducing/contracting an object/picture to appropriate dimension.*

10. State four measures that should be put in place in a computer laboratory to safeguard users’ health. [2mks]

* *All power cables must be insulated and hidden from users*
* *The furniture used must be of standard computer furniture*
* *The room should be lit with adequate lighting.*
* *The room must be well ventilated.*
* *Computer monitor should be fitted with anti-glare to filter excess light rays emanating from the monitor.*
* *Avoid slippery floors/cemented floors.*
* *Controlling dust.*

11. List four file organization methods in a computer. [2mks]

* *Serial (heap)*
* *Sequential*
* *Random*
* *Indexed sequential*

12. Give two differences between Post Office mail and electronic mail (email). [1mk}

* *Email is fast compared to post office mail*
* *With email one can get an immediate feedback.*
* *Email is less expensive than post office*
* *Email can be forwarded to many people without retyping unlike the post office mail.*

13. Name two types of relationship that can be applied in a database design. 36 [1mk]

* *One to one*
* *One to many*
* *Many to many*

14. Give two types of program translators as used in programming. [2mks]

* *Interpreters*
* *Assemblers*
* *Compilers*

15. List the first four steps in program development cycle in their logical sequences. [2mks]

* *Problem recognition*
* *Problem definition /analysis*
* *Program design*
* *Program coding*

**Section B (60 Marks) Answer All The Questions In This Section**

16. a) Give two characteristics of scripting languages. [2mks]

* *Use of tags.*
* *It is interpreted and not compiled*
* *Do not have declaration part*
* *User-friendly – are portable*
* *Must be embedded in the browser*

b) Describe two types of errors that may be detected during program testing. [4mks]

* *Syntax errors- errors arising due to violation of language rules*
* *Logical errors- errors arising from poor logic such as incorrect use of formulas/semantic*
* *Runtime errors- occur when there is abrupt interruption of running program.*

c) A company’s workers travel to work either by public or private means. All workers are paid a travel allowance of Ksh. 200, but those using private means are paid an additional Ksh. 100.

 i) Write a pseudo-code to determine a worker’s travel allowance. [4mks]

 *Answer*

1. *Start*
2. *Input transport\_ means*
3. *If Transport\_ Means = Public Then*

*Transport\_allownce = 200*

 *Else*

 *Transport\_allowance = 300*

1. *Print Transport\_allownce*
2. *Stop*

ii) Draw a flowchart to determine a worker’s travel allowance. [5mks]

Read T ransp\_Means

Tr ansp\_Means = public

Transp\_allowance = 200

Print T ransp\_allowance

Transp\_allowance = 300

Marks

Input - ½

Decision – 1

Process – 1

Output – ½

 Start /stop – 1

Logic – 1

 Total = 5marks

17. a) State and explain **three** coding schemes used in computing. [6mks]

* *ASC11 – 7 Bits.*
* *BCD – 4 Bits*
* *EBCDIC – 8 bits. ( stating 1mk Explanation 1mk)*

(b) Using one’s and two’s complement work out 910-410.Show the working. [4mks]

 *9 – 1001 (½ mk)*

 *4 – 0100 (½ mk)*

*Complementing 1011 (½ mk)*

*Adding 1001 (½ mk)*

 *1011*

 *(1) 0100 over flow add*

 *0100*

 *1*

 *0101 (½ mk)*

*ii) Using two’s complement.*

 *4 to two’s complement.*

 *1011*

 *1*

 *1100 ½ mk*

 *Add 1001*

 *1100 ½ mk*

 *(1) 0101*

 *Over flow ignore.*

 *= 0101 ½ mk*

(c) Convert 3.7510 to binary. [3mks]

* *310 = 0112*
* *0.7510 = 0.112*
* *Hence 3.7510 = 011.112*

(d) State **four** number systems used in computing. [2mks]

* *Binary number system*
* *Octal number system*
* *Hexadecimal number system*
* *Decimal number system*

18. a) Briefly explain the following terms. [5mks]

* Cell - *Intersection of row and column in a spreadsheet.*
* Range - *A group of cells*.
* Label –*text with no numerical value.*
* Value – *constant, a number content of a cell*
* Function – *a combination that is predefined by an electronic spreadsheet*

 b) A Spreadsheet has the following entries:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | A  | B  | C  | D  | E  | F  | G |
| 1 | PROJECTED BUDGET  |  |  |  |  |  |
| 2 | Percent  | 10.0% |  |  |  |  |  |
| 3 |  |  |  |  |  |  |  |
| 4 | ITEM  | 1996 | 1997 | 1998 |  |  |  |
| 5 | Food | 56,000 |  |  |  |  |  |
| 6 | Clothes  | 24,000 |  |  |  |  |  |
| 7 | Fees  | 50,000 |  |  |  |  |  |
| 8 | Transport  | 20,000 |  |  |  |  |  |
| 9 | Entertainment  | 15,000 |  |  |  |  |  |
| 10 |  |  |  |  |  |  |  |
| 11 |  |  |  |  |  |  |  |

 Provide a formula for cell C5 that can be copied onto cell D5 and the range C6:D10 to give a uniform increase of 10% of the previous year’s value for each item. [3mks]

* =$B$2\*C5

c) Give any four types of data entries that may be input into a worksheet cell. [2mks]

* *Numeric (Number)*
* *Text*
* *Formulae/Function*
* *Data*

d) Name three types of validation checks during data entry. [3mks]

* *Field type/data type*
* *Field size*
* *Format*
* *Reasonableness*
* *Range constraint*
* *Presence check*

e) Other than I/O devices, list other four devices under the control of the operating system. [2mks]

* *Main memory*
* *CPU/Processor*
* *Secondary storage*
* *Communication devices and ports*

19. a) Differentiate between Cache and Buffer memories. [4mks]

* ***Buffer*** *-Control the speed difference between communicating device or Control the speed imbalance between two devices.*
* ***Cache*** *- It boost CPU processing speed because the CPU can access it much more quickly than RAM.*

b) i) State two importance of internet to society. [2mks]

* *Enhances commerce*
* *Improved communication*
* *Enhance research*
* *Enhance learning through (electronic learning)*

ii) Describe two challenges that internet has brought to society. [2mks]

* *Individual privacy cannot be guaranteed*
* *Moral and cultural issues have been greatly affected*
* *Security as a lot of information can be accessed from the internet.*
* *Piracy of information*

c) i) What is a computer keyboard? [1mk]

* *Input device with keys for keying in data in the form of characters.*

ii) Name and explain the function of the following key symbols found in a keyboard.

i) [2mks]



 Enter - Used to execute commands

- Used to move the cursor insertion point to the next line

ii) [2mks]



Shift - Used to change lower case to uppercase characters and other keys with two symbols/letters.

- Used together with direction keys to select highlight characters or cells

iii) [2mks]



Tab — Used to move the cursor at intervals.