

BUTERE DISTRICT JOINT EVALUATION TEST - 2010

451/1

COMPUTER STUDIES

PAPER 1

MARKING SCHEME

1. (a) Purpose of registers in a computer systems.
To temporarily hold data that is waiting to be processed or after processing. 1mk

(b) Types of register found in the central processing unit.
- Addressing register
- Storage register 1mk
2. Comparison between a data matrix and a laser printer.
Dot matrix – Low print quality, noisy, Low cost
Laser – High print quality, quiet, costly 3mks
3. Convert $3BD_{16}$ to Octal
3 – 0111 D – 1101
B – 1011
$$3BD_{16} = \frac{0111011101}{7\ 6\ 7\ 5} = 7675_8$$
 3mks
4. (a) Importance of internet to society
- Enhances commerce
- Improved communication 2mks

(b) Challenges that internet has brought to society
- 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. 2mks
5. Difference between
(i) Validity integrity
The data entered is valid 1mk
(ii) Entity integrity
Data is entered in the correct field 1mk
(iii) Referential integrity
All records entered in the related tables exist in the primary table 1mk
6. Computer crimes taking place in the society
- Hacking
- Cracking
- Eaves dropping
- Piracy 2mks
7. Three coding systems in computer processing.
- ASCII EBCDIC
- BCD BCDIC 3mks
8. (a) Application areas of spreadsheets.
- Accounting
- Forecasting
- Statistical analysis

- In mathematical and scientific fields. 2mks
- (b) Formulae of the following with reference to cell G20, = F10 + G20
= F10 + &G&20 1mk
- 9. Modular programming and its advantages.
Modular programming is breaking of a program into componets.
Advantages
 - Flexible
 - Easier to read and modify 2mks
- 10. Possible ways of fitting the document in one page.
 - Reduce the line spacing
 - Adjust the left and right margins
 - Reduce the font size. 3mks
- 11. Functions of each of the following
 - (a) Network protocol
Rules that govern the flow of information in a network. 1mk
 - (b) Hub
Connects the server and network devices. 1mk
- 12. Difference between the following
 - (a) Input mask and design
Input mask automatically formats the field entry into a specifies form. Design sets the field and data type. 2mks
 - (b) Table and query
Table is a database structure used to hold related records
Query – statement used to extract, change, analyze or request specific data from one or more tables. 2mks
- 13. Factors to be considered when purchasing an operating system.
 - Authenticity
 - Documentation
 - User friendliness
 - Cost 2mks
- 14. An algorithm to compute the area of a triangle

Start	Area = Pie (3.142) x radius x radius
Read Radius	Print Radius
	Stop.
- 15. Artificial intelligence is
Branch of computer that is concerned with the development of machines that emulate human like qualities such as learning, researching, communicating, seeing and hearing. 2mks

SECTION B. (60 MARKS)

- 16. (a) What would the flowchart generate as output if the value of N at input was:
 - (i) 6?

N	M	N	F	M	F
6	1	1	1	4	24
	2		2	5	120
	3		6	6	720
 - (ii) 1?

2mks

N	M	F	F	
1	1	1	1	2mks

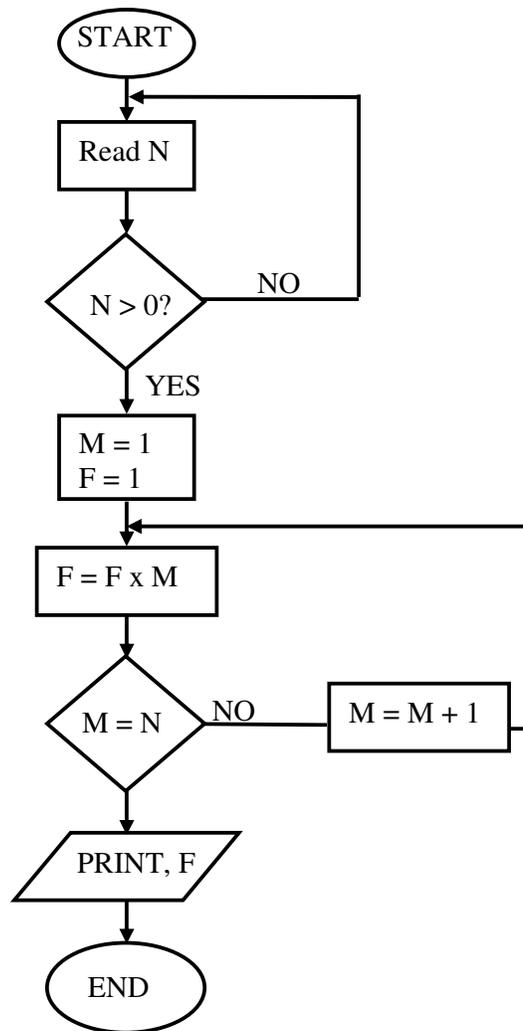
(b) Pseudocode that does the same thing as the flow chart above

```

Start
Read N
Initialize      M to 1
                F to 1
Calculate F = F x M
IF M = N Then
    Print, F
Else M = M + 1
End IF
Stop

```

(c) Modify the flow chart so as to reject an input below 0 and to avoid the looping when the input is 0 4mks



17. (a) Two ways in which a computer can represent a positive and negative number 2mks
 Positive number – Uses an extra (0) bit
 Negative number – uses an extra (1) bit 2mks

(b) A particular computer stores numbers in a single 8 – bit word. How would it represent 0.3125_{10} ?

$$\begin{array}{rcl}
 0.3125 \times 2 & = & 0.6250 \quad 0 \\
 0.6250 \times 2 & = & 1.25 \quad 1 = 0.0101_2 \\
 0.25 \times 2 & = & 0.50 \quad 0 \\
 0.5 \times 2 & = & 1.00 \quad 1
 \end{array}$$

3mks

(c) Decimal equivalent of the number 1.0111_2 ?

$$\begin{aligned}
 & 1 \times 2^0 + 0 \times 2^{-1} + 1 \times 2^{-2} + 1 \times 2^{-3} + 1 \times 2^{-4} \\
 & 1 + 0 + 1 \times \frac{1}{4} + 1 \times \frac{1}{8} + 1 \times \frac{1}{16} = 1 + 0.25 + 0.125 + 0.00625 \\
 & \qquad \qquad \qquad = 1.38125_{10}
 \end{aligned}$$

(d) Perform the decimal subtraction $14_{10} - 6_{10}$ using:

(i) Regular binary

$$\begin{array}{r|l|l|l}
 2 & 14 & 0 & = 1110_2 \\
 2 & 7 & 1 & \\
 2 & 3 & 1 & \\
 2 & 1 & 1 &
 \end{array}
 \qquad
 \begin{array}{r|l|l}
 2 & 6 & 0 = 0110_2 = 1110 \\
 2 & 3 & 1 \\
 2 & 1 & 1
 \end{array}
 \qquad
 \begin{array}{r}
 1110 \\
 \underline{0110} \\
 1000_2 = 1000_2
 \end{array}$$

One's complement of $6_{10} = 1001$

$$\begin{array}{r}
 \text{Therefore} \quad 1110 \\
 \quad \quad \quad 1001 + \\
 \quad \quad \quad (1)0111 \quad = 0111_2 \\
 \quad \quad \quad \swarrow \\
 \quad \quad \quad \text{Overflow bit}
 \end{array}$$

18. (a) The formula = K20 + P & 18 was typed in cell L21 and then copied to cell M24 of spreadsheet. Write the formula as it appears in M24

$$= L23 + P \& 18 \quad 2\text{mks}$$

(b) Spreadsheet is a collection of sheets made up of rows and columns on which numerical data is entered and manipulated. 1mk

(ii) Examples of spreadsheet packages

- MS excel
- Corel Quattro pro
- Lotus 1 – 2 – 3
- Open office calc. 2mks

(iii) Explanation of the following terms in spreadsheet

What IF analysis – This involves changing the value of one of the arguments in a formula to see the difference the change would make on the result of the calculation. 1mk

Cell – Intersection between a row and a column. 1mk

Formula – User defined expression that creates a relationship between cells to return a new value. 1mk

Pie – chart – Graphical/representation/ displays the contribution of each value to a grand total. 1mk

(c) Distinguish between the following

(i) Worksheet and workbook

Worksheet is a collection of rows and columns where data is entered. Workbook is a collection of worksheets. 2mks

(ii) Filtering and sorting

Filtering is selecting data in a worksheet based on a criteria. Sorting is arranging data in a certain order. 2mks

(d) Way in which user may reverse the last action taken in a spreadsheet package.

- Undo command
- Control + Y 1mk

19. (a) Information system is collection of entries that work together to process information and disseminate information (people, procedures, technologies and other resources)

(b) Circumstances under which interviews may be used as a method of gathering information. 1mk

- When in deepest information is required.
- Small number of people are involved. 2mks

(c) (i) Computer laboratory is a room specially prepared to facilitate installation and provide an environment for teaching and learning. 1mk

(ii) Measures that should be observed when using the computer laboratory to protect computers against loss of data.

- Creation of back up copies.
- Install UPS to prevent power surges. 2mks

(d) Factors you would consider before enrolling for an ICT course in an institution of higher learning.

- Level of certification
- Facilities available
- Cost 3mks

(e) Duties of the following computer professionals.

(i) Computer programmer.

- Formulating programs
- Installing and testing programs 2mks

(ii) System analyst

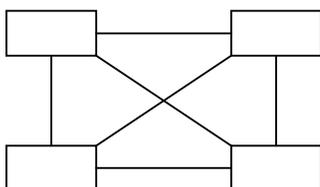
- Gather information – Supervise training of users
- Designs new system – triase with programmes to develop the code. 2mks

(iii) Computer technician.

- Troubleshooting computer hardware and software
- Ensure computer accessories circle working
- Assembling and upgrading computers and their components 2mks

20. (a) Distinguish between unshielded twisted pair (UTP) and shielded twisted pair(STP) cables
UTP do not have a shield that prevents electromagnet interference hence they are susceptible to noise and signal interference. 2mks

(b) (i) Describe the mest topology.



3mks

(ii) Advantage and disadvantages of the above network topology.

Advantage:

- Nodes communicate directly to each other.
- In case of failure of one node the other still communicate

Disadvantages

- Expensive to install (many cables are required)
- Difficult to install. 3mks

(c) Limitations of computer networking.

- Cost
- Data security
- Network failure
- Moral and cultural issues
- Over reliance on networks. 4mks

(d) Definition of the following terms

(i) Data terminal equipment

Refers to equipments or devices at both ends of communication link. 1mk

(ii) Remote terminal

Computer terminals that is not 1mk

(iii) Intranet

Computer network within one building. 1mk