



STRATHMORE INSTITUTE
DIPLOMA IN BUSINESS MANAGEMENT/DIPLOMA IN INTERNATIONAL
RELATIONS/DIPLOMA IN ENTREPRENEURSHIP/DIPLOMA IN
PROCUREMENT/DIPLOMA IN JOURNALISM AND NEW MEDIA
END OF SEMESTER EXAMINATION
DBM 1105/DIR 1105/DPR 1105/DE 1106/DJNM 1107
FUNDAMENTALS OF INFORMATION TECHNOLOGY

DATE: 20th AUGUST 2019

TIME: 2 Hours

Instructions

1. This examination consists of **FIVE** questions.
2. Answer **Question ONE (COMPULSORY)** and any other **TWO** questions.
3. Do not write on the question paper.

SECTION A: (30 marks)

QUESTION ONE

Ethan is a Bachelor of Arts graduate from one of the public universities in Kenya. Due to the lack of a stable income, Ethan decided to set up a small business three years ago. His business provides printing, photocopying and scanning services. His photocopier, which was inherited from his elder brother, is a multipurpose device able to copy, print, fax and scan. Business has been good so far and in the next few months Ethan hopes to expand his services to include typing and editing. He has acquired a small loan from a friend to top-up his savings and bought two more computers to take care of the extra services that he hopes to provide. Next year, he hopes to have an internet connection, increase the number of computers from two to ten, buy a new printer and open a cyber café. Ethan approaches you as a good friend for assistance on various computer issues that he seems not to figure out.

Below is part of a conversation that the two of you had.

You: ...and you need a good operating system. It is the most important software that you have to install on your computer.

Ethan: Okay.

You: You will also need enough RAM to run your applications.

Ethan: What is RAM?

You: It means random access memory. In fact there are various types: there is Static RAM or SRAM, dynamic RAM or DRAM, magneto resistive RAM or MRAM....

Ethan: Magneto..What? Wait.....these computer terms are too many. I only know the basics. I can switch on a computer, I can connect it to power, I can type documents, save them, retrieve them and print. I don't know many of the things that you are talking about....now what is an operating system? What do I need it for? My computer has been working fine without it...and what is RAM? And why so many types....Mmmm...this is too much! My brother always sorts out my computer issues...

You ...Ethan....your brother won't always be there with you...It is important that you understand some basics so that when he is away you won't be stranded.

Required:

- (a) Ethan said that his computer works well without an operating system (OS).
- i) Is this true? **(1 mark)**
 - ii) Explain your response in (a) i) above supporting your response with **four** arguments for or against the need of the OS. **(4 marks)**
 - iii) Describe to him **two** categories/types of operating systems. Give at least one example of each. **(4 marks)**
- (b) If Ethan were to set up a small network within his business premises:
- i) What network architecture would you recommend and why? **(1 mark)**
 - ii) Using a well labeled diagram describe the network architecture you have recommended in (b) i) above. **(4 marks)**
 - iii) Explain **three** disadvantages of the recommended network architecture in (a) i) above. **(3 marks)**
 - iv) Propose to Ethan **one** type of network printer (by specific name), that he would need to purchase, giving him a brief description of the printer and **two** of its advantages. **(3 marks)**
 - v) If Ethan wants to replace a hard disk in one of the computers, explain **two** factors that he should consider when purchasing the hard disk? **(2 marks)**
 - vi) Explain to Ethan **two** characteristics of RAM **(2 marks)**
 - vii) Explain **two** ways in which Ethan would care for his computers so as to keep them in working condition for long. **(2 marks)**

- (c) Ethan may also need to consider the ergonomics of his cyber café.
- i) What does the term ‘ergonomics’ mean? **(1 mark)**
 - ii) Recommend **three** considerations Ethan could make to ensure that his cyber café is ergonomically designed. **(3 marks)**

SECTION B: (15 marks per question. Choose any Two)

QUESTION TWO

- (a) A ‘hacker’ is a person who gains or attempts to gain unauthorized access to a computer system. Recently a colleague complained to you that someone had accessed his private mail through the university’s network. Advice on **four** ways an administrator can prevent such an intrusion or any other unauthorised access of computers or networks. **(4 marks)**
- (b) Distinguish between a worm, a computer virus, a trojan, in the context of computer security. **(3 marks)**
- (c) More and more companies today are moving away from traditional ways of data storage to cloud storage.
- i. Define cloud storage **(1 mark)**
 - ii. Explain **four** benefits of cloud storage. **(4 marks)**
- (d) A computer’s motherboard is made up of various components. State the role of each of the components below:
- i. Heat sink **(1 mark)**
 - ii. Expansion Slot **(1 mark)**
 - iii. Central Processing Unit **(1 mark)**

QUESTION THREE

- (a) Information systems are a foundation for conducting business today. In many industries, survival and even existence is difficult without extensive use of information technology. Businesses today use information systems to achieve various objectives.
- i) Define an information system clearly highlighting the activities it performs. **(2 marks)**
 - ii) What Information System does Strathmore University students and lecturers use for activities such as enrolling into classes checking grades, attendance, updating marks? **(1 mark)**
 - iii) Information is a corporate resource. Explain **four** qualities of good information. **(2 marks)**
 - iv) Discuss any **two** major types of information systems used in a business enterprise. Clearly indicate the role they play and the management levels the information systems serve. **(4 marks)**
 - v) Giving relevant examples, explain **two** strengths of computer based information systems in business management. **(2 marks)**
- (b) Discuss **four** provisions that can be made to cater for the needs of the physically challenged in regard to their use of input and output devices. **(4 marks)**

QUESTION FOUR

(a) You are provided with the following computer components;

- Processor
- An input device
- An output device and
- Memory or Storage unit

Using Von Neumann model as a template for all modern computers, use a diagram to explain how these components interact. Any important components in the processor should be shown. **(5 marks)**

(b) Computer Software is a set of instructions that drive a computer to perform specific tasks and controls the computer’s physical devices. Giving **two** examples of each, define the following major categories of software. **(4 marks)**

- i) System Software
- ii) Application Software

(c) Describe any **two** services available on the Internet that you could apply in your specific area of study or in your career. **(2 marks)**

(d) The history of computers is divided into generations, with each generation being defined by a technological breakthrough. Briefly describe the fourth generation of computers. **(4 marks)**

QUESTION FIVE

(a) The sales data below have been entered into an excel worksheet. Use the information given to answer the questions that follow.

	A	B	C	D
1	Region	Coke (No of crates)	Minute Maid (No of crates)	Total
2	Nairobi	4000	1000	5000
3	Mombasa	3000	4000	
4	Kisumu	5000	4000	
5	Wajir	3000	6000	
6	Total			
7	Highest value			

- i) Write **one formula** and **one function** which if placed in B6 will show the total number of crates figure for the coke column. **(2 marks)**
 - ii) Write a function that would be placed in cell D7 to give the highest number of crates for the coke column. **(1 mark)**
 - iii) If the formula placed in cell D2 is copied down the column to cell D5, what will be the formula in D5? **(1 mark)**
 - iv) What feature in MS Excel would be used to copy the formula used in cell D2 along the range of cells D3:D5. **(1 mark)**
- (b) What is the smallest unit of data that can be stored in a computer? **(1 mark)**
- (c) Why are binary numbers important in computing? **(2 marks)**
- (d) Perform the following conversions: Clearly show your workings.
- i) Decimal number 240_{10} to binary **(2 marks)**
 - ii) Binary number 1110010_2 to decimal **(3 marks)**
- (e) Calculate the number of bits in 256MB **(2 marks)**