



PAN AFRICA CHRISTIAN UNIVERSITY

DIPLOMA IN INFORMATION AND COMMUNICATION TECHNOLOGY

END OF TERM EXAMINATION

DEPARTMENT: COMPUTING AND INFORMATION TECHNOLOGY

COURSE CODE: DICT0111

COURSE TITLE: INTRODUCTION TO COMPUTERS AND OPERATING
SYSTEMS

EXAM DATE: MONDAY 27TH JULY 2015

TIME: 1400 – 1700 HRS

INSTRUCTIONS

- This exam script has **TWO (2)** sections.
- Read all questions carefully before attempting.
- Answer All questions in Section **A** and any other Four questions in Section **B**.
- Write your **student number** on the answer booklet provided.
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SECTION A
(Answer ALL questions in this section)

Question 1:

- a. Define the following computing terms as applied in the in the 21st Century: (14marks)
 - a. Computer System
 - b. Operating System
 - c. Data & Information
 - d. Input & Output Systems
 - e. File & Storage Systems
 - f. Computer Network & Communication System
 - g. Computer Software & Application System
- b. List three (3) peripheral computing devices and briefly discuss their application (3marks)
- c. List three (3) different operating systems and briefly discuss their application (3marks)

SECTION B
(Answer any FOUR (4) questions in this section)

Question 2:

- a. Discuss the following components of the computer (7marks)
 - a. CPU and its components
 - b. Multi-core CPU
 - c. BUS and its components
 - d. Bridge
 - e. Memory
- b. Explain how the CPU works? (3marks)
- c. Differentiate the two (2) categories of memory giving examples (4marks)
- d. Discuss any three (3) categories of modern computers and their application in society (6marks)

Question 3:

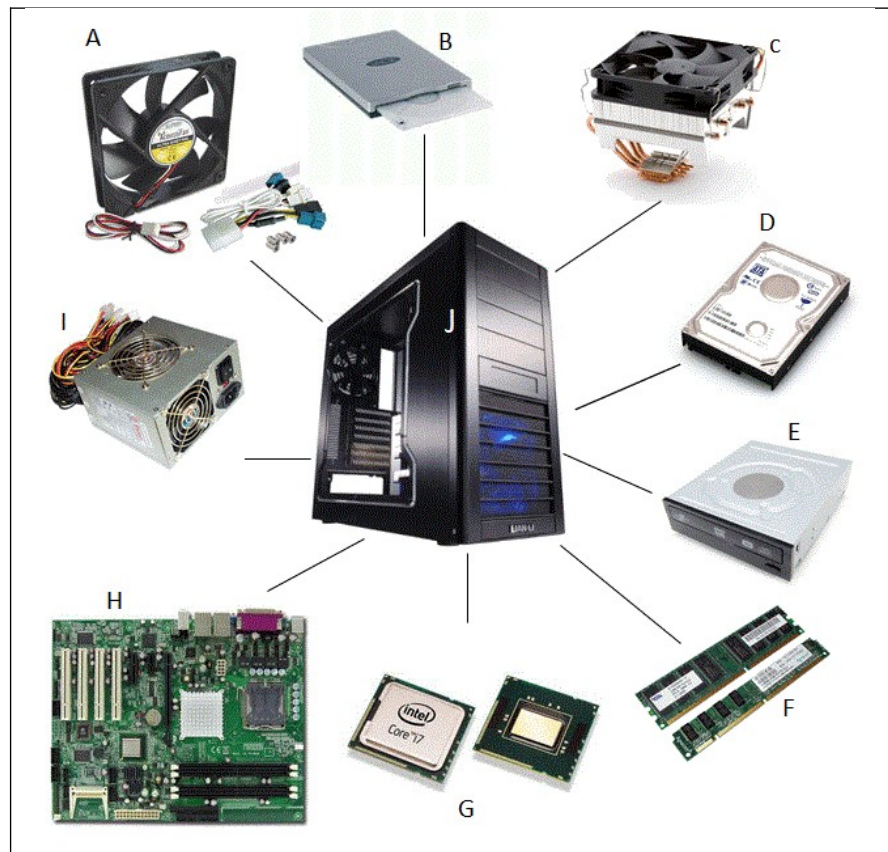
- a. Discuss three (3) functions and benefits of an Operating System (6marks)
- b. Explain the terms: (4marks)
 - a. Supervisor or kernel mode
 - b. User mode?
- c. Explain why the supervisor or kernel mode and user mode necessary? (4marks)
- d. Discuss the function carried out by the following utilities: (4marks)
 - a. Backup
 - b. Defragment
 - c. Format
 - d. Check Disk
- e. Explain the difference between main memory and virtual memory (2marks)

Question 4:

- Define a process in an operating system? Explain the relationship between: a processor, a process, a program, and an algorithm? (4marks)
- Draw the state diagram of a process from its creation to termination, including all transitions, and briefly elaborate every state and every transition (4marks)
- Explain the function of an assembler. State what is involved in assembling a single instruction? (4marks)
- CPU scheduling approach minimises the average wait time. Explain why this scheduler is generally impossible to implement, expound using appropriate examples (4marks)
- The semaphore methods Wait() and Signal() must be atomic to ensure a correct implementation of mutual exclusion. Show using an execution sequence that if Wait() is not atomic then mutual exclusion cannot be maintained.(4marks)

Question 5:

- Study the image below to answer the question (5marks)



- Explain the role of the following components used in the assembly of a computer
 - A, C, H, I and J

- b. As a student of Diploma in ICT, you desire to assemble a desktop workstation for your studies. List the specification of the main computer unit giving justification for your selection. (5marks)
- c. Discuss any five (5) important software needed to run and operate your computer in b above. (5marks)
- d. Your family intends to buy a printer because they frequently prints photos. They are uncertain whether to get a laser printer or an impact printer. Which type of printer would you advise your family buy and why? (5marks)

Question 6:

- a. Discuss the steps involved in installing and commissioning an Operating System on to a bare metal computer (10marks)
- b. Discuss three (3) types of file systems in computers (6marks)
- c. Explain the process of creating a multiboot disk with more than one operating system (4marks)

Question 7:

- a. Discuss the art (protocol) of communication between computers (or networks)? (5marks)
- b. Explain the functions of the following devices: (5marks)
 - a. Network Switch
 - b. Network Router
 - c. Access Point
 - d. Firewall
 - e. Modem
- c. Give/List values for the following: (5marks)
 - a. How many Bits in a Byte
 - b. How many Bytes are in a Megabyte
 - c. How many Kilobits are in a Megabyte
 - d. You purchase a 40 Gig hard disk. What is the exact capacity bytes when installed in the computer?
- d. Explain what the Internet is? (2marks)
- e. Differentiate between, Internet, Intranet and Extranet? (3marks)