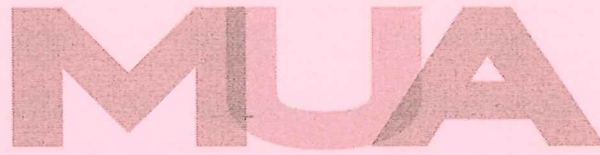


The
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DIPLOMA UNIVERSITY EXAMINATIONS
SCHOOL OF MANAGEMENT AND LEADERSHIP
DIPLOMA IN INFORMATION COMMUNICATION
TECHNOLOGY

DIT 102: BASICS OF OPERATING SYSTEMS

DATE: 4TH DECEMBER 2024

DURATION: 2 HOURS

MAXIMUM MARKS: 70

INSTRUCTIONS:

1. Write your registration number on the answer booklet.
2. **DO NOT** write on this question paper.
3. This paper contains **SIX (6)** questions.
4. Question **ONE** is compulsory.
5. Answer any other **FOUR** questions.
6. Question **ONE** carries **30 MARKS** and the rest carry **10 MARKS** each.
7. Write all your answers in the Examination answer booklet provided.

QUESTION ONE

Read the Case Study below carefully and answer the questions that follow:

Computers have become an integral part of our modern society, revolutionizing the way we work, communicate, and live. Earlier, computers were not so fast and powerful. After thorough and meticulous research and work by various scientists, modern-day computers have come up.

Initially, the computers made did not have an Operating system and to run each program a different code was used. This had made the processing of data more complex and time taking. All modern computing devices including Laptops, Tablet, mobile phones, etc. comprise an Operating System which helps in the smooth working of the device. An operating system acts as an intermediary between the user of a computer and the computer hardware. The purpose of an Operating system is to provide an environment in which a user can execute programs in a convenient and efficient manner.

An operating system brings powerful benefits to computer software and software development. Without an operating system, every application would need to include its own UI, as well as the comprehensive code needed to handle all low-level functionality of the underlying computer, such as disk storage, network interfaces and so on. Once installed, the operating system relies on a vast library of device drivers to tailor OS services to the specific hardware environment. Thus, every application may make a common call to a storage device, but the OS receives that call and uses the corresponding driver to translate the call into actions (commands) needed for the underlying hardware on that specific computer.

Required:

- a) Discuss the THREE (3) functions of an operating system [6 MARKS]
- b) Describe the THREE (3) Different Types of Operating Systems [6 MARKS]
- c) Discuss THREE (3) importance of security in operating systems [6 MARKS]
- d) Discuss THREE (3) components of a computer system [6 MARKS]
- e) List two common file formats for software applications [2 MARKS]
- f) Differentiate between a process and a thread [4 MARKS]

QUESTION TWO

- a) Assess the difference between multitasking and multiprocessing [4 MARKS]
- b) Explain the concept of time-sharing in operating systems. [4 MARKS]
- c) Discuss the role of device drivers in an operating system [2 MARKS]

QUESTION THREE

- a) Evaluate the difference between system software and application software [4 MARKS]
- b) Compare and contrast FAT and NTFS file types [4 MARKS]
- c) Define a computer [2 MARKS]

QUESTION FOUR

- a) Explain one impact of operating system on computing in a production industry [4 MARKS]
- b) Examine why software licensing is important [2 MARKS]
- c) Differentiate between paging and segmentation [4 MARKS]

QUESTION FIVE

- a) List Two types of threads [4 MARKS]
- b) Asses the purpose of process scheduling [4 MARKS]
- c) Explain how an SSD differ from an HDD [2 MARKS]

QUESTION SIX

- a) Assess TWO necessary conditions for a deadlock to occur [4 MARKS]
- b) Explain virtual memory [2 MARKS]
- c) What is the function of the CPU [1 MARK]
- d) List three Scheduling algorithms [3 MARKS]

