



Where Leaders are Made

UNIVERSITY EXAMINATIONS: 2025/2026

**END OF SEMESTER EXAMINATION FOR THE DIPLOMA IN
INFORMATION COMMUNICATION TECHNOLOGY**

DICT0111

**INTRODUCTION TO COMPUTERS AND OPERATING SYSTEMS
SEPTEMBER-DECEMBER 2025**

**DATE: DECEMBER, 2025
HOURS**

DURATION: 2

TIME: 8:30AM-10:30AM

INSTRUCTIONS: Question One is Compulsory, Choose Three Other Questions

SECTION A (COMPULSORY)

QUESTION ONE (15 Marks) Compulsory

- a) Differentiate between system software and application software, providing one example of each. **(2 marks)**
- b) Discuss the role of firmware in system operation and innovation within a computing environment. **(6 marks)**
- c) Explain the significance of input and output devices in enhancing human-computer interaction, citing at least two examples for each category. **(7 marks)**

SECTION B: (ANSWER ANY THREE (3) QUESTIONS IN THIS SECTION)

QUESTION TWO (15 marks)

- a) Explain the concept of deadlock in operating systems, including one real-world example. **(3 marks)**
- b) Identify and describe two major types of security breaches that can occur within an operating system environment. **(4 marks)**
- c) Discuss in detail the five states of a process in an operating system, illustrating how a process transitions between these states during its lifecycle. **(8 marks)**

QUESTION THREE (15 marks)

- a) Identify and explain two common methods of interacting with a Linux operating system. **(4 marks)**
- b) State the function of each of the following Linux commands: **(5 marks)**
 - i. ls
 - ii. cd
 - iii. mv
 - iv. cp
 - v. rm
- c) Write a Linux shell script that prompts the user to enter two numbers, adds them, and displays the result. **(6 marks)**

QUESTION FOUR (15 marks)

- a) List three common causes of latency in computer networks and explain their impact on data transmission. **(3 marks)**
- b) Differentiate between bandwidth and throughput in the context of computer networks, providing appropriate examples. **(4 marks)**
- c) Discuss the following categories of personal data, explaining how each is collected and used in digital systems: **(8 marks)**
 - i. Volunteered Data
 - ii. Observed Data
 - iii. Inferred Data

QUESTION FIVE (15 marks)

- a) Outline the sequence of events that occur when a user visits a website such as www.google.com, starting from entering the URL to webpage display. **(3 marks)**
- b) Explain the importance of web protocols in Internet communication, highlighting four reasons why they are essential for reliable data exchange. **(4 marks)**
- c) Using appropriate examples, describe how the following protocols function within the TCP/IP model: **(8 marks)**
 - i. HTTP
 - ii. HTTPS
 - iii. DNS
 - iv. FTP

QUESTION SIX (15 marks)

- a) Define an operating system and explain its main functions in computer resource management. **(5 marks)**
- b) Discuss the differences between batch processing, time-sharing, and real-time operating systems, giving one example for each. **(6 marks)**
- c) Evaluate the importance of multitasking and multiprocessing in improving system performance. **(4 marks)**