



# KISII UNIVERSITY

## UNIVERSITY EXAMINATIONS

### FIRST YEAR EXAMINATION FOR THE AWARD OF CERTIFICATE IN INFORMATION TECHNOLOGY

#### FIRST SEMESTER, 2023/2024

#### (AUGUST-DECEMBER, 2023)

#### CIT 01011: OPERATING SYSTEMS

**STREAM: Y1 S1**

**TIME: 2 HOURS**

**DAY: THURSDAY, 09.00 – 11.00 AM**

**DATE: 30.11.2023**

#### **INSTRUCTIONS**

- 1. Do not write anything on this question paper.**
- 2. Answer Question ONE [Compulsory] and any other TWO Questions**

#### **QUESTION ONE**

- Describe **five** advantages of an operating system that supports batch processing **(10marks)**
- The computer system is made up of different buses that facilitate input/output process. Explain **five** types of the buses **(10marks)**
- Operating system deadlocks are due to various causes. Describe **five** of this causes **(10marks)**

#### **QUESTION TWO**

- Outline **four** reasons for implementing threads at the user level **(4 marks)**
- Outline **four** difference between a process and thread as applied in operating system **(8marks)**
- The process control block of an operating system comprises of different types of information. Explain **four** types of this information **(8marks)**

#### **QUESTION THREE**

- Describe **three** circumstances that may lead to mutual exclusion during process management **(6marks)**
- Janet intends to transfer data between a low-speed- device to a high-speed device in her computer system:
  - Describe most appropriate technique that she could use to transfer the data **(2marks)**
  - Outline **four** advantages of the technique in (1) **(4marks)**
- Alex would like to have efficient disk space utilization for file allocation. Describe **four** methods that he could use **(8marks)**

#### QUESTION FOUR

- a) Explain four components of programmable clocks **(8marks)**
- b) Explain **two** items required by bankers' algorithm approach for deadlocks prevention **(4marks)**
- c) A disk rotates at a constant speed in a computer system. Describe **four** components that are used when selecting a track of such a disk **(8marks)**

#### QUESTION FIVE

- a) Describe **four** advantages of paging as us used in memory management **(8marks)**
- b) A computer system used linked list file allocation technique. Explain three limitations of this technique **(6marks)**
- c) With an aid of diagram, describe three process state of a computer process **(6marks)**