061005T4ICT

ICT TECHNICIAN LEVEL 5

IT/OS/ICT/CR/6/5

Manage Operating Systems

March/April 2025

TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND CERTIFICATION COUNCIL (TVET CDACC)

WRITTEN ASSESSMENT

TIME: 3 HOURS

INSTRUCTIONS TO CANDIDATE

1. This paper consists of **TWO** sections: **A** and **B**.
2. Answer **ALL** questions in section **A** and **ANY THREE** (3) questions in section **B.**
3. Marks for each question are indicated in the brackets.
4. Candidates are provided with a separate answer booklet
5. Do not write on the question paper.

This paper consists of THREE (3) printed pages

Candidates should check the question paper to ascertain that all

pages are printed as indicated and that no questions are missing.

SECTION A (40 MARKS)

Answer ALL the questions in this section.

1. Define the following terms as used in operating systems.   (5 Marks)

   i.   Process

   ii. Kernel

   iii. Shell

   iv. System call

   v.   Thread

2. Identify FIVE major functions of the operating system software.   (5 Marks)

3. Distinguish between multitasking and multiprogramming as used in operating systems.   (2 Marks)

4. List FOUR types of operating systems structures.   (4 Marks)

5. A process control block keeps all the information needed to keep track of a process. Explain FIVE categories of information about a process held by a PCB data structure.

          (10 Marks)

6. Distinguish between Preemptive scheduling algorithms and non-preemptive scheduling algorithms.   (2 Marks)

7. List any TWO examples of preemptive scheduling algorithms.   (2 Marks)

8. Differentiate between deadlock avoidance and deadlock prevention.   (4 Marks)

9. Define the following terms as used in computer operating systems.   (4 Marks)

   i. File

   ii. File system

10. List any TWO attributes of a computer file.   (2 Marks)

SECTION B (60 MARKS)

Answer Any THREE Questions in This Section

11.

a) Discuss the following types of operating systems. (10 Marks)

  i. Batch operating systems

  ii. Real time operating systems

  iii. Time sharing operating systems

  iv. Distributed operating systems

  v. Network operating systems

b) Using a well-labeled diagram, explain the process state lifecycle. (10 Marks)

12.

a) Explain FOUR factors that lead to a deadlock. (8 Marks)

b) Discuss FOUR memory management techniques. (8 Marks)

c) Differentiate between disk defragmentation and disk partitioning. (4 Marks)

13.

a) Distinguish between device driver and device controller as used in device management.

(4 Marks)

b) Explain the meaning of the following disk performance parameters. (8 Marks)

  i. Seek time

  ii. Rotational delay

  iii. Transfer time

  iv. Access time

c) A word processing file is identified using extension (.docx). List FIVE other file extensions commonly used in file management. (5 Marks)

d) Using suitable examples .Discuss THREE direct data entry devices. (3 Marks)

14.

a) Discuss the following computer files access methods. (6Marks)

  i. Sequential file access

  ii. Random sequential

  iii. Index sequential

b) James was advised to consider upgrading his laptop operating system. Discuss FIVE factors that can justify this move. (10 Marks)

c) Explain TWO disk scheduling algorithms. (4 Marks)