TEVETA

Technical Education, Vocational and Entrepreneurship Training Authority

DIPLOMA IN COMPUTER SYSTEMS ENGINEERING

LEVEL 6 YEAR I EXAMINATIONS

FINAL INTEGRATED SUMMATIVE EXAMINATIONS

SITTING: NOVEMBER/ DECEMBER 2025

SUBJECT: OPERATING SYSTEMS

TIME: THREE (3) HOURS **TOTAL MARKS 100**

PASS MARKS 50

INSTRUCTIONS TO CANDIDATE:

1. Write your examination number and National Registration Card Number on the answer booklet provided. Ensure you append your signature in the space provided on the answer booklet
2. Write the ANSWER SCRIPT SERIAL NUMBER on the examination register and on the entry slip
3. There are SEVEN (7) questions in this paper
4. Question ONE is **Compulsory**
5. Attempt four (4) question from the remaining six (6)
6. All questions carry equal marks

Cell phones and programmable calculators are NOT allowed in the examination room

DO NOT TURN THIS PAPER UNTIL YOU ARE TOLD TO DO SO

QUESTION ONE – COMPULSORY

a. List the authentication problems in the operating systems (8 marks)
b. Differentiate buffering from caching (6 marks)
c. Explain two (2) ways in which a domain can be realized (6 marks)

[Total 20 marks]

QUESTION TWO

a. Describe three methods of passing parameters to the operating system (6 marks)
b. Explain two (2) advantages of a virtual machine for the operating system architecture (4 marks)
c. Describe the difference between a service and the function of an operating system (6 marks)
d. List four services provided by an operating system that are designed for user convenient with computer System (4 marks)

[Total 20 marks]

QUESTION THREE

a. Distinguish between internal and external fragmentation (8marks)
b. Most systems allow programs to allocate more memory to its address space during execution. Data allocation in the heap segment is an example of this kind. Explain what may be needed to support dynamic memory allocation in the following.
   i. Pure paging. (4 marks)
   ii. Pure segmentation (4 marks)
   iii. Contiguous memory allocation (4 marks)

[Total 20 marks]

QUESTION FOUR

a. Explain five (5) concerns of threat monitoring by the operating system. (10 marks)
b. Explain how an operating system manages files. (10 marks)

[Total 20 marks]

QUESTION FIVE

a. Describe how hardware can support demand paging (4 marks)
b. Explain how a system can establish a corresponding physical location for a page. (6 marks)
c. Explain the meaning of page replacement (4 marks)
d. Describe how the following happens in memory allocation
   i. FIFO (3 marks)
   ii. LIFO (3 marks)

[Total 20 marks]

QUESTION SIX

a. Define the following categories of a system program,
   I. Loader. (2 marks)
   II. Linkers. (2 marks)
   III. Compilers (2 marks)
   IV. Assemblers (2 marks)
   V. Debuggers (2 marks)

b. Explain the operating system debugging. (10 marks)

[Total 20 marks]

QUESTION SEVEN

a. Distinguish between progressive download and real time streaming. (4 marks)
b. Discuss techniques that could be used to meet quality service requirements for multimedia systems. (6 marks)
c. Contrast unicasting, multicasting, and broadcasting as techniques for delivering content across a computer network. (10 marks)

[Total 20 marks]