1920/106
OPERATING SYSTEMS
November 2018
Time: 3 hours

THE KENYA NATIONAL EXAMINATIONS COUNCIL

CRAFT CERTIFICATE IN INFORMATION TECHNOLOGY

MODULE I

OPERATING SYSTEMS

3 hours

INSTRUCTIONS TO CANDIDATES

*This paper consists of **FIFTEEN** questions in **TWO** sections, **A** and **B**.*
*Answer **ALL** the questions in section **A** and any **FOUR** in section **B** in the answer booklet provided.*
Candidates should answer the questions in English.

This paper consists of 4 printed pages.

Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.

Turn over

SECTION A (40 marks)

*Answer **ALL** the questions in this section*

1. Outline **four** features of the *graphical user interface* of an operating system. (4 marks)

2. With the aid of a diagram, describe the *monolithic architecture* of an operating system. (4 marks)

3. Joel had the following options displayed as he shut down the computer.

   (i) Sleep;

   (ii) Log off.

   Outline the outcome of each of the options if selected. (4 marks)

4. Define each of the following terms as used in operating systems:

   (i) device controller;

   (ii) shell. (4 marks)

5. Differentiate between a *compact disk* and a *digital versatile disk* with respect to data storage as used in computer systems. (4 marks)

6. Jeremy intends to acquire a printer for his personal use. Explain **two** factors other than cost, that he should consider. (4 marks)

7. Describe each of the following types of *process schedulers:*

   (i) short term scheduler;

   (ii) long term scheduler. (4 marks)

8. Tony used the following keyboard keys during data entry.

   (i) CapsLock;

   (iii) Shift.

   State the function of each of the keys. (4 marks)

9. Outline **two** differences between a *thread* and a *process* as used in process management. (4 marks)

10. Outline the function of each of the following *utility programs* in operating systems:

    (i) disk defragmenter;

    (ii) disk cleanup. (4 marks)

SECTION B (60 marks)

*Answer any **FOUR** questions in this section*

11. (a) Define the term *data file* as used in operating systems file management. (1 mark)

(b) Jaunty intends to acquire a computer with a *liquid crystal display (LCD)* screen. Explain **two** advantages of this screen. (4 marks)

(c) Joan is involved in the development of operating system software. Explain **three** *memory placement techniques* that she could implement during the process. (6 marks)

(d) Owane, a lecturer, discussed operations that an operating system could perform on a file during one of her classes. Outline **four** examples that she could have discussed. (4 marks)

12. (a) Describe each of the following *memory management* techniques as used in operating systems:

(i) segmentation;

(ii) paging. (4 marks)

(b) With the aid of a diagram, describe *multiprogramming processing* as applied in operating systems. (4 marks)

(c) Kenny, a lecturer, intends to prepare lecture notes on the objectives of *process scheduling* in operating systems. Outline **three** objectives that he could include in his notes. (3 marks)

(d) Differentiate between *interrupt* and *system call* as used in operating systems. (4 marks)

13. (a) With the aid of a sketch, describe the *round robin* scheduling algorithm as applied in process management. (5 marks)

(b) Describe each of the following disk scheduling algorithms:

(i) SCAN;

(ii) C-LOOK. (4 marks)

(c) Explain **three** circumstances that would cause the premature termination of a process during execution in an operating system. (6 marks)

14. (a) Explain **three** factors that could affect the performance of a storage disk in a computer system. (6 marks)

(b) With the aid of a diagram, describe a *three process state* model. (6 marks)

(c) Lucy set *file attributes* on files she created in a computer. Outline **three** such attributes. (3 marks)

15. (a) A certain company has installed an operating system that uses *batch processing method* for its operations. Outline **three** advantages of this method. (3 marks)

(b) With the aid of a diagram, describe each of the following as used in storage device management:

(i) track;

(ii) sector. (4 marks)

(c) Distinguish between *single buffering* and *double buffering* as used in operating systems. (4 marks)

(d) Deadlocks in a computer system can occur due to various factors. Explain **two** of these factors. (4 marks)

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