1920/106
OPERATING SYSTEMS
July 2018
Time: 3 hours

THE KENYA NATIONAL EXAMINATIONS COUNCIL

CRAFT CERTIFICATE IN INFORMATION TECHNOLOGY

MODULE I

OPERATING SYSTEMS

3 hours

INSTRUCTIONS TO THE CANDIDATES

*This paper consists of **TWO** sections; **A** and **B**.*
*Answer **ALL** the questions in section **A** and any **FOUR** questions 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 B (60 marks)

*Answer any **FOUR** questions from this section.*

11. (a) List **six** examples of navigational keys of the qwerty keyboard. (3 marks)

(b) Ruth intends to assign file attributes to a file in a database. Explain **three** attributes that she could assign to the file. (6 marks)

(c) The operating system applies different ways in order to improve disk performance. Explain **three** of this ways. (6marks)

12. (a) Outline **four** file management operations of the operating system. (4 marks)

(b) Distinguish between *short term scheduler* and *long term scheduler* as applied in process management. (4 marks)

(c) Joel found a computer in the computer room that had only the operating system installed on it. Outline **four** accessories of the operating system that he could use. (4 marks)

(d) Describe *interface metaphor* as used in operating systems, giving **four** examples. (3 marks)

13. (a) Distinguish between *maskable* and *non maskable* interrupts as applied in operating systems. (4 marks)

(b) Job intends to compile a report on the computer visual display units. Outline **four** examples that he could include in the report. (4 marks)

(c) Explain the following file paths, giving an example in each case:

(i) relative path;

(ii) absolute path. (4 marks)

(d) Figure 1 shows a type of scheduling algorithm. Use it to answer the questions that follow

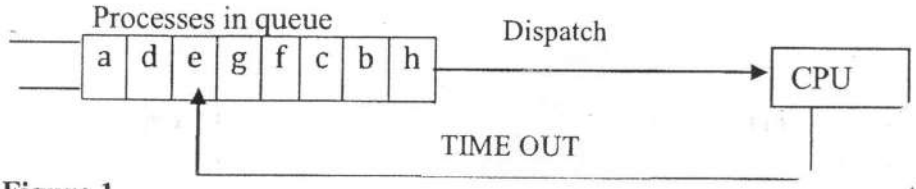

Figure 1

Given that the processes have equal time bursts,

(i) identify the scheduling algorithm in Figure 1.

(ii) explain the advantage of the scheduling algorithm iden

14. (a) Jacob a systems administrator intends to control access to an org system. Explain **three** logical measures he could put in place to a

SECTION A (40 marks)

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

1. The computer processes can be either *CPU bound* or *I/O bound*. Explain **one** disadvantage of each of these modes of operation. (4 marks)

2. Explain **two** disadvantages of a *FAT 32 file system*. (4 marks)

3. (a) Outline **two** advantages of using *multiprocessor* systems. (2 marks)

   (b) Explain a circumstance where *shortest job first* scheduling algorithm could be applied in process management. (2 marks)

4. Outline **four** functions of the operating systems *memory manager*. (4 marks)

5. Explain the function of each of the following utility programs:

   (a) Disk defragmenter;

   (b) Disk cleanup. (4 marks)

6. Explain each of the following terms as applied in inter process communication:

   (a) pipe;

   (b) deadlock. (4 marks)

7. Explain **two** examples of computer terminals as used in computer systems. (4 marks)

8. Distinguish between *physical* and *logical* address as applied in memory management. (4 marks)

9. Explain a circumstance that would necessitate each of the following types of fragmentation to occur in memory partition:

   (a) external; (2 marks)

   (b) internal. (2 marks)

10. (a) List **four** examples of operating systems currently in the market. (2 marks)

    (b) Explain the concept of *context switch* as applied in process management. (2 marks)

(b) Explain each of the following terms as used in process management:

(i) circular wait;

(ii) race condition. (3 marks)

(c) Consider a disk which has 20 cylinders with an initial request on cylinder 3. The disk receives new requests for cylinder 1, 5, 12, 8, 6 and 4 respectively. With the aid of a graph in each case represent this scenario using each of the following disk scheduling algorithms:

(i) SCAN;

(ii) First Come First Served (FCFS);

(iii) Shortest Seek First (SSF). (6 marks)

15. (a) Jameni Company uses a *time sharing operating system* for its operations. Outline **three** features of this system. (3 marks)

(b) With the aid of a diagram, describe *swapping* as applied in memory management. (6 marks)

(c) Describe each of the following scheduling algorithms:

(i) pre emptive;

(ii) non pre emptive. (4 marks)

(d) Outline the function of the following key board keys:

(i) PrtScn;

(ii) insert. (2 marks)

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