Name_____ Index No._____

1920/106
OPERATING SYSTEMS
November 2014
Time: 3 hours

Signature _____

Date_____

THE KENYA NATIONAL EXAMINATIONS COUNCIL

CRAFT CERTIFICATE IN INFORMATION TECHNOLOGY

OPERATING SYSTEMS

3 hours

INSTRUCTIONS TO CANDIDATES

*Write your **name** and **index number** in the spaces provided above.*
***Sign** and write **the date of examination** in the spaces provided above.*
*This paper consists of **15 (FIFTEEN)** questions in **TWO** sections: **A** and **B***
*Answer **ALL** the questions in **Section A** in the spaces provided after each question.*
*Answer any **FOUR** questions in **Section B** in the spaces provided after each question.*
Candidates should answer the questions in English

For Examiner's Use Only

Section	Question	Maximum score	Candidates score
A	1-10	40	
B	11	15	
	12	15	
	13	15	
	14	15	
	15	15	
	Total score		

This paper consists of 12 printed pages

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

SECTION A (40 MARKS)

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

1. (a) Define the term *hit ratio* as used in memory management. (2 marks)

(b) Outline the function of *virtual file systems* in operating systems. (2 marks)

2. Distinguish between *protected* and *supervisor* modes as used in operating systems. (4 marks)

3. Define each of the following terms as used in computer systems:

(i) audit trail; (2 marks)

(ii) firewall. (2 marks)

4. Distinguish between *manual* and *automatic* software installation as used in systems. (4 marks)

5. Describe each of the following terms as used in memory management:

(i) relocating loader; (2 marks)

(ii) direct memory access. (2 marks)

6. Explain the circumstance under which each of the following file operations could be applied:

(i) append; (2 marks)

(ii) delete. (2 marks)

7. Outline the functions of each of the following concepts as used in operating systems:

8. Explain each of the following types of locking mechanisms as applied in operating systems:

(i) shared (X); (2 marks)

(ii) exclusive (S). (2 marks)

9. Define each of the following terms as used in memory management:

(i) deadlock; (2 marks)

(ii) starvation. (2 marks)

10. Distinguish between *disk defragmenter* and *disk cleanup* as used in operating systems. (4 marks)

SECTION B (60 MARKS)

*Answer Any **FOUR** questions in this section in the spaces provided.*

11. (a) Explain each of the following types of operating systems stating the most appropriate area where it could be applied:

(i) real time operating system; (3 marks)

(ii) distributed operating system. (3 marks)

(b) The following is a list of different examples of software; classify them as either operating system or application software. (3 marks)

Android, Ms Office 2010, Unix, Sage, Ms Windows XP, Lotus 1-2-3.

(c) Yuma a computer operating systems expert has been invited by Jumbo College to give a brief description of NT file systems. Explain **three** advantages of NTFS that he could mention. (6 marks)

12. (a) Define *addressibility* as used in computer memory. (1 mark)

(b) Differentiate between the *best fit* and *first fit* policies as used in memory management. (4 marks)

(c) Explain the function of each of the following as used in operating systems:

(i) pipe; (2 marks)

(ii) signal. (2 marks)

(d) With the aid of a diagram, describe the paged memory management technique. (6 marks)

13. (a) Explain each of the following replacement policies as used in memory management:

(i) least recently used; (2 marks)

(ii) not recently used. (2 marks)

(b) ABZ Bank has integrated the use of redundant arrays of independent disks (RAIDS) in their operations. Explain **two** advantages that the bank is likely to achieve from the use of this disk. (4 marks)

(c) Johanna intends to purchase an operating system for his computer. Outline **two** factors that he should consider. (4 marks)

(d) The operating system performs several functions one of them being *job control*. Explain **two** ways in which the operating system carries out this function. (3 mark)

14. (a) Outline the function of each of the following commands as used in operating systems:

(i) dir (1 mark)

(ii) cd.. (1 mark)

(b) With the aid of a diagram, describe the following methods of file organizations:

(ii) sequential; (3 marks)

(iii) indexed. (3 marks)

(c) Explain the circumstance that could cause a process to be in each of the following states:

(i) blocked; (2 marks)

(ii) ready. (2 marks)

(d) Jake prefers a GUI command driven interface. Explain **three** features that could have influenced his preference. (3 marks)

15. (a) Define the term *throughput* as used in operating systems. (1 mark)

(b) Outline **two** functions of metaphors in operating systems. (2 marks)

(c) Lenora came across the following file attributes when revising for her operating systems examination. Explain the function of each of the attribute:

(i) No-dump; (2 marks)

(ii) system; (2 marks)

(iii) archive. (2 marks)

(d) Operating systems are designed to prevent deadlock. Outline **three** ways in which operating systems achieve this function. (6 marks)