Name_____ Index No._____/____

1920/106
OPERATING SYSTEMS
November 2015
Time: 3 hours

Candidate's 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.

Turn over

SECTION A (40 MARKS)

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

1. Explain each of the following terms as used in process management:

   (i) hold and wait; (2 marks)

   (ii) sleep and wake. (2 marks)

2. Explain each of the following terms as used in memory management:

   (i) spooling; (2 marks)

   (ii) overlay. (2 marks)

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

   (i) shell; (2 marks)

(ii) system call. (2 marks)

4. Explain **two** functions of semaphore as used in concurrency control. (4 marks)

5. Distinguish between *trap* and *scheduler* resource stating an example for each as used in operating systems. (4 marks)

6. With the aid of a diagram, describe the *layered* operating system. (4 marks)

7. Distinguish between *protector* and *supervisor* modes of operation in operating systems. (4 marks)

8. With the aid of an example, describe the term *device driver* as used in operating systems. (4 marks)

9. Explain **two** advantages of *graphical user interface* as used in operating systems. (4 marks)

10. Explain **two** functions of a *process control block* in an operating system. (4 marks)

SECTION B (60 MARKS)

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

11 (a) Process management is one of the functions of the operating system. Explain **three** activities that the operating system carries out during this process. (6 marks)

(b) Zahra intends to procure an operating system for her organization. Explain **three** factors other than cost that she should consider. (6 marks)

(c) With the aid of a diagram, describe *circular wait* as used in operating systems. (3 marks)

12. (a) Outline **three** functions of system clock in operating systems. (3 marks)

(b) Table 1 shows three processes in a memory. Use it to answer the questions that follow.

Process	Waiting time
P_T	20
P_K	0
P_Z	15

Table 1

(i) Suppose the arrival order of the processes is P_K, P_T and P_Z then using the first come first served schedule algorithm, draw the Gantt chart to represent this information. (2 marks)

(ii) calculate the average waiting time for the process. (2 marks)

(c) With the aid of a diagram in each case, describe each of the following memory management techniques:

(i) paged; (4 marks)

(ii) partitioned. (4 marks)

13. (a) Explain the term *remote procedure call* as used in process management. (2 marks)

(b) Define each of the following as used in memory addressing:

(i) logical address; (2 marks)

(ii) physical address. (1 mark)

(c) Derrick an ICT specialist for Koja Co Ltd has advised the company to use the open source operating system platform. Explain **three** advantages of this platform. (6 marks)

(d) Distinguish between *pre-emptive* and *non pre-emptive* scheduling as used in operating systems. (4 marks)

14. (a) Zippy, the head of the ICT department in an airline proposed to the company to purchase a real time operating system. Explain **three** reasons that could justify her proposal. (6 marks)

(b) When revising for an operating systems exam, Joy came across the terms *dumb* and *intelligent* terminal. Describe each of these terms in data transmission. (4 marks)

(c) James chose to purchase an operating system with an NT file system. Explain **one** advantage of this file system that he could have considered. (2 marks)

(d) Liana had the following examples of software when revising for her computer exam. Classify them as either system or application software. (3 marks)

Windows, Lotus 123, Quadruple, Linux, Ms Office 2013 and Android

15. (a) List **three** examples of utility programs in operating systems. (3 marks)

(b) With the aid of an example, describe the term *virtual device* as used in operating systems. (2 marks)

(c) With the aid of a diagram, describe *linked* file allocation methods as used in operating systems. (4 marks)

(d) Ken approved of the microkernel approach to operating systems design. Explain **three** reasons that could have led to his approval. (6 m

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