

1920/106
OPERATING SYSTEMS
July 2016
Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL
CRAFT CERTIFICATE IN INFORMATION TECHNOLOGY
OPERATING SYSTEMS

3 hours

INSTRUCTIONS TO CANDIDATES

*This paper consists of TWO sections; A and B.
Answer ALL the questions in section A.
Answer any FOUR questions from section B.
Write your answers 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.

SECTION A (40 marks)

Answer ALL the questions in this section.

1. Distinguish between *semaphore* and *metaphor* memory addressing as used in operating systems. (4 marks)
2. Explain each of the following terms as used in operating systems:
 - (i) kernel; (2 marks)
 - (ii) dispatcher. (2 marks)
3. Explain each of the following memory design requirements used in operating systems:
 - (i) coherency; (2 marks)
 - (ii) locality of reference. (2 marks)
4. Describe each of the following terms as used in operating systems:
 - (i) relocating loader; (2 marks)
 - (ii) job control language. (2 marks)
5. Distinguish between *best fit* and *worst fit* as used in memory management. (4 marks)
6. Ruby recommended the inclusion of RAID technology for data storage. Explain **two** advantages this system would provide. (4 marks)
7. Explain the function of each of the following types of computer memories:
 - (i) cache memory; (2 marks)
 - (ii) virtual memory. (2 marks)
8. Carmine noted that most of the software she bought came on CD-ROMs. Justify this trend giving **two** reasons. (4 marks)
9. Distinguish between *static RAM* and *dynamic RAM* as used in memory management. (4 marks)
10. Define each of the following terms as used in file management:
 - (i) relative path; (2 marks)
 - (ii) absolute path. (2 marks)

SECTION B (60 marks)

Answer any FOUR questions from this section.

11. (a) Explain the term *service pack* as used in operating systems. (2 marks)
- (b) Purity intends to write a report on causes of deadlocks in process management.
- (i) Explain **three** possible causes that could be included in the report. (6 marks)
- (ii) Identify a possible solution for each of the three causes identified in (i). (3 marks)
- (c) Using a diagram, describe the *NT file* system as applied in operating systems. (4 marks)
12. (a) Explain the term *direct memory address* as applied in operating systems. (2 marks)
- (b) Rebecca has been tasked with creating security controls on standalone computers that were installed. Outline **three** software controls that she could put in place. (3 marks)
- (c) With the aid of a diagram, describe *round robin* scheduling algorithm. (6 marks)
- (d) Joshua the ICT manager for Jomba Company recommended the purchase of an operating system with a graphical user interface. Explain **two** reasons for this move. (4 marks)
13. (a) With the aid of an example, describe the term *spooling* as used in operating systems. (3 marks)
- (b) Jerkin Company intends to replace its current operating system. Explain **three** factors other than cost, which they should consider in the selection of a new operating system. (6 marks)
- (c) A currently running process could be suspended by the operating system due to different reasons. Explain **three** such reasons. (6 marks)
14. (a) List **six** examples of utility programs as applied in computer systems. (3 marks)
- (b) During an operating systems class, the teacher discussed various attributes that could be assigned to a file. Explain **three** such attributes. (6 marks)
- (c) With the aid of a diagram, describe the *process control block (PCB)*. (6 marks)

15. (a) With the aid of a diagram, describe *paged* memory management technique. (6 marks)
- (b) Most computer users prefer USB flash memory to compact disks for use as storage media. Explain **three** reasons for this emerging trend. (6 marks)
- (c) With the aid of an example, describe the term *device driver* as used in operating systems. (3 marks)

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