

1920/106
OPERATING SYSTEMS
July 2017
Time: 3 hours



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

3 hours

INSTRUCTIONS TO CANDIDATES

This paper consists of 15 (FIFTEEN) questions in 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.

SECTION A (40 Marks)

Answer ALL the questions in this section.

1. With the aid of a diagram, describe *circular wait* as used in process management. (4 marks)
2. Outline the function of each of the following as used in operating systems:
 - (a) disk defragmenter;
 - (b) device driver. (4 marks)
3. Distinguish between *semaphore* and *interface metaphor* as used in operating systems. (4 marks)
4. Jiana chose to acquire a disk operating system for her computer. Outline **four** characteristics of operating system that she could have considered. (4 marks)
5. Distinguish between *standby* and *logoff* modes as used in operating systems. (4 marks)
6. Kelvin, a systems analyst for Jockey Company has advised the management to acquire a *layered* operating system. Explain **two** advantages of this operating system that he could have considered. (4 marks)
7. Sammy had the following options when trying to install an operating system:
 - (a) upgrade;
 - (b) repair.Explain the function of each of the options. (4 marks)
8. Explain the function of each of the following as used in operating systems:
 - (a) Job control language;
 - (b) Relocating loader. (4 marks)
9. Explain a circumstance that would necessitate each of the following in memory management:
 - (a) page fault;
 - (b) trap. (4 marks)
10. The management of ADEK Company has installed *distributed operating systems* for their operations. Explain **two** reasons for this move. (4 marks)

SECTION B (60 Marks)

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

11. (a) Outline **three** functions of the *system clock* as applied in computer systems. (3 marks)
- (b) Describe each of the following *disk arm scheduling* algorithms:
- (i) scan;
 - (ii) look. (4 marks)
- (c) With the aid of a diagram, describe *segmentation* as used in memory management. (6 marks)
- (d) Explain a circumstance that would necessitate the use of file directories in a computer system. (2 marks)
12. (a) List **three** types of *read only memories* in a computer system. (3 marks)
- (b) With the aid of a diagram, describe the following types of *page placement* policies:
- (i) best fit;
 - (ii) worst fit. (6 marks)
- (c) A computer analyst recommended an operating system with an NT file system over the one with FAT system. Explain **three** reasons for his recommendation. (6 marks)
13. (a) With the aid of an example, describe *absolute file path* as used in file management. (2 marks)
- (b) Explain the function of each of the following:
- (i) RAID disks;
 - (ii) cache memory. (4 marks)
- (c) Distinguish between *logical* and *physical* address as used in operating systems. (4 marks)
- (d) With the aid of a diagram describe the *process control block* as used in operating systems. (5 marks)

14. (a) Define *audit trail* as used in operating system security. (2 marks)
- (b) Explain each of the following types of computer file attributes:
(i) archive;
(ii) hidden. (4 marks)
- (c) Explain the difference between *quick format* and *full format* as used in operating systems. (4 marks)
- (d) With the aid of a diagram, describe a *three process state* model in operating systems. (5 marks)
15. (a) Define each of the following terms as used in operating systems:
(i) fully associative;
(ii) set associative. (4 marks)
- (b) Describe **two** examples of *computer terminals* as used in operating systems. (4 marks)
- (c) With the aid of a diagram describe *round robin* scheduling algorithm as used in operating systems. (4 marks)
- (d) Figure 1 shows computer desktop icon. Use it to answer the question that follows.



Figure 1

Identify and explain the function of the icon. (3 marks)

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