

## CRAFT CERTIFICATE IN INFORMATION TECHNOLOGY

### OPERATING SYSTEMS

3 hours

#### INSTRUCTIONS TO CANDIDATES

This paper consists of 15 questions in TWO sections: A and B.

Answer ALL the questions in Section A.

Answer any FOUR questions in Section B.

#### SECTION A ( 40 MARKS)

Answer All the questions in this section.

1. Define each of the following terms as used in operating systems: ( 2 marks)

(i) DMA;

(ii) Shell.



2. Ken intends to procure an operating system for his personal computer. Explain two factors that he should consider. ( 4 marks)

3. Distinguish between preemptive and non preemptive scheduling algorithms as used in process management. ( 4 marks)

4. Explain each of the following memory placement policies:

(i) Best fit; ( 2 marks)

(ii) First fit. ( 2 marks)

5. Describe each of the following terms as used in operating systems.

(i) Spooling; ( 2 marks)

(ii) Semaphore. ( 2 marks)

6. Zipper intends to procure a computer and has approached you for advice on the benefits of the virtual memory to his computer.



Explain to her two benefits of this memory ( 4 marks)

7. Describe each of the following file organization methods as used in operating systems:

(i) Sequential; ( 2 marks)

(ii) Serial. ( 2 marks)

8. Outline two functions of the dispatcher as used in process management. ( 4 marks)

9. Distinguish between monolithic and layered systems as used in operating systems. ( 4 marks)

10. Explain the following terms as used in process management:

(i) Mutual exclusion; (2 marks)

(ii) Circular wait. ( 2 marks)

## SECTION B ( 60 MARKS)



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

11. (a) (i) Define the term firmware as used in operating systems. ( 2 marks)

(ii) Describe the term device independence as used in operating systems. ( 2 marks)

(b) Josh came across the following MS-DOS commands when revising for an operating systems exam.

Explain the function of each of these commands:

(i) Rd; (1 mark)

(ii) Md; ( 1 mark)

(iii) Dir. (1 mark)

(c ) Consider the file search criteria as specified by the following wild card specifications:

(i) Zeg\*8



(ii) Zeg???

Describe the expected output after each specification is applied. (4 mark)

(d) Describe each of the following terms as used in operating systems: ( 4 marks)

(i) critical section;

(ii) starvation.

12. (a) Arrange the following memory capacities in descending order; 200000 bytes, 1.2PB, 10TB, 205GB, 3125MB, 220500KB. ( 4 marks)

(b) With the aid of diagrams, describe two types of fixed partition allocation used in memory management.(8 marks)

(c ) Lara came across the following file extensions when working on her computer.



Identify the applications that would have been used to create each file:

(i) .mdbx ( 1 mark)

(ii) .png ( 1 mark)

(iii) .wav ( 1 mark)

13. (a) (i) Outline three types of ROM as used in memory management.( 3 marks)

(ii) Explain the term cache as used in memory management. ( 2 marks)

(b) Mercy prefers the command interface to the graphical user interface.

Explain three reasons for her preference. ( 6 marks)

(c ) With the aid of a diagram describe the RAID system as used in device management. ( 4 marks)



14. (a) Outline three reasons that could cause a process to terminate.( 3 marks)

(b) Sasha prefers to back up her data using compact disks.

Explain three reasons for her preference. ( 6 marks)

(c ) Sera Company Ltd intends to put controls in their organization to prevent unauthorized access to the system.

Explain three logical security measures that could be used to achieve this objective. ( 6 marks)

15. (a) Outline the function of each of the following as used in disk management:

(i) Actuator; ( 1 mark)

(ii) Read/write head. ( 1 mark)

(b) Peter would like to design an operating system.



Explain three qualities of a process scheduling algorithm that he should consider.( 6 marks)

(c ) With the aid of a diagram, describe the process control block as used in process management. ( 5 marks)

(d) Explain the circumstance under which the First Come First Served process schedule algorithm could be applied.  
( 2 marks)

