

SECTION A (40 MARKS)

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

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

(i) DMA;

(ii) shell. (2 marks)

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: (2 marks)

(i) best fit;

(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 she 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 system. (4 marks)

10. Explain of 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)

- (ii) dir. (1 mark)

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

- (i) zeg*8

- (ii) zeg???8

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

(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)
