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;

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   _____

   (ii) shell. (2 marks)

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

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

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4. Explain each of the following memory placement policies:

   (i) best fit; (2 marks)

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   _____

(ii) first fit. (2 marks)

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

(i) spooling; (2 marks)

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(ii) semaphore. (2 marks)

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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)

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

(i) sequential; (2 marks)

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(ii)   serial.   (2 marks)

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

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

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

(i)   mutual exclusion;   (2 marks)

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(ii)   circular wait.   (2 marks)

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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)

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

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(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)

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(ii) md; (1 mark)

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(ii) dir. (1 mark)

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(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)

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

    (i)   critical section;

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    (ii)   starvation.

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

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

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(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)

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(ii) .png   (1 mark)

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(iii) .wav   (1 mark)

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

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

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(b) Mercy prefers the *command interface* to the graphical user interface. Explain **three** reasons for her preference. (6 marks)

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

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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)

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

(i) actuator; (1 mark)

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

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(b) Peter would like to design an operating system. Explain **three** qualities of a process scheduling algorithm that he should consider. (6 marks)

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

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

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