

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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