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[19-HBPGKOW–M3S(O) 20M]

MCA/MScIT 3rd Semester (Old) Exam., 2019 (W)

OPERATING SYSTEM

[MCA/MScIT (S3) 10]

Full Marks : 80

Time : 3 hours

The figures in the margin indicate full marks for the questions

1. Answer any *five* from the following questions : 2×5=10

(a) What is race condition?

(b) Why is thread called a lightweight process?

(c) What is message passing?

(d) State one advantage and one disadvantage of shortest job-first algorithm.

(e) Name the three events concerning resource allocation.

(f) Define swapping and relocation.

2. Answer any *three* from the following questions : 4×3=12

(a) What is defragmentation? State the differences between external fragmentation and compaction. 1+3=4

(b) What are the steps required for changing the system environment variables?

(c) Explain the various types of macros along with their functions.

(d) What are Trojan horses? How do they enter into the system and start attacks? 1+3=4

3. Answer any *three* from the following questions : 6×3=18

(a) Write short notes on the following : 2×3=6

(i) System calls

(ii) Critical section

(iii) Multiprogramming

(b) State the functions provided by the kernel for enabling and disabling interrupts. Explain the purposes of wait( ) and signal( ). 2+4=6

(c) Explain the various goals of scheduling. Briefly explain the different types of scheduling. 2+4=6

(d) Define deadlock. Describe the various conditions that are held simultaneously for causing a deadlock. 2+4=6

4. Answer any *four* from the following questions : 10×4=40

(a) What is cache memory? Describe memory hierarchy and the working of the cache memory system. 2+8=10

(b) With the help of a neat diagram, explain the producer-consumer problem.

(c) Explain the common techniques used for deadlock recovery. Briefly describe the concept of modelling deadlock. 5+5=10

(d) Explain any five major operations done on directories. Distinguish between random access and sequential access approach for file handling with suitable examples. 5+5=10

(e) Define the process of authentication using digital signature. How can you digitally sign a document? Explain the public key encryption technique.

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