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49 (OS)

[16–HRAGDA–M3]

MCA/MScIT 3rd Semester Exam., 2016

OPERATING SYSTEM

[MCA (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 : 2×5=10

(a) Define deadlock and livelock.

(b) Differentiate between a worm and a virus.

(c) Define thrashing. When does thrashing occur?

(d) What is the purpose of long- and short-term schedulers?

(e) What is a device driver?

(f) Define digital signature.

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

(a) Define operating system. What are the objectives of an operating system?

(b) Describe Trojan horse and login spoofing attack in brief.

(c) Differentiate between shared memory and distributed memory multiprocessor systems.

(d) What are various states of a process life cycle?

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

(a) What is race condition? Show using example why race condition should be avoided.

(b) Explain in brief different types of thread using suitable examples and diagrams.

(c) Give the steps in handling mechanism of the system when a page fault occurs.

(d) What is a semaphore variable? Explain the purpose of 'SLEEP' and 'WAKEUP' primitives citing suitable examples.

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

(a) Briefly explain contiguous and linked allocation of files using examples. 5+5=10

(b) Differentiate between preemptive and non-preemptive schedulings. Show the differences between FCFS and RR schedulings using the following process and their corresponding CPU burst. [Time quantum = 20] : 2+8=10

Process	*CPU burst*
P1	16
P2	24
P3	54
P4	39
P5	14

(c) Why should deadlock be avoided? Give the conditions for deadlock. State the strategies for dealing with deadlock. 2+4+4=10

(d) What is the need of the DMA technique? Discuss the sequence of events in transferring data using DMA controller. 2+8=10

(e) Define multiprogramming. Discuss the following memory allocation strategies with their advantages and disadvantages : 1+3+3+3=10

(i) Best-fit

(ii) First-fit

(iii) Worst-fit

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