No. of Printed Pages—2

49 (OS)

[17–HDGKACRM–M3]

MCA/MScIT 3rd Semester Exam., 2017

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) List two advantages of distributed system.

(b) Define semaphore.

(c) When does a race condition occur?

(d) Define context switching.

(e) Define spooling.

(f) Explain the terms 'authentication' and 'authorization'.

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

(a) Distinguish between real-time system and time-sharing system.

(b) Explain the various requirements needed for solutions to critical section (CS) problem.

(c) Discuss the following terms with respect to addressing :

(i) Isolated I/O

(ii) Memory mapped I/O

(d) Define encryption. Discuss briefly the symmetric key encryption technique.

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

(a) Discuss briefly the following terms :

(i) Long-term scheduling

(ii) Medium-term scheduling

(iii) Short-term scheduling

(b) Explain in brief the two categories of thread implementations.

(c) Define inter-process communication (IPC). What are the issues involved in IPC? Describe the IPC mechanism.

(d) Why is direct memory access (DMA) needed? What are the major advantages of DMA over programmed I/O and interrupt driven I/O?

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

(a) Differentiate between internal fragmentation and external fragmentation. Describe the concept of simple segmentation. 2+8=10

(b) Define paging. Discuss any three page-replacement algorithms. 1+3+3+3=10

(c) Discuss briefly the following file allocation methods : 5×2=10

(i) Contiguous allocation

(ii) Linked allocation

(d) Define deadlock. What are the necessary conditions of deadlock? Write a brief note on Banker's algorithm. 2+3+5=10

(e) Write short notes on the following : 5×2=10

(i) Indexed sequential files

(ii) Magnetic drives

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