MCA 3rd Semester Examination 2013
Paper - X
(Operating System)

Time : 3 Hrs. Full Marks : 80

1. Answer any five questions from the following (each within 50 words) 2×5 = 10

   (a) What is a device driver?

   (b) Define a process. What are its different states?

   (c) What is a race condition? When does it occur?

   (d) Mention one advantage of Round Robin algorithm.

   (e) 'The most common example for deadlock is a traffic jam'. Justify the statement.

   (f) Define the concept of locality of reference.

   (g) Write down the most common operation on files.

2. Answer any three questions from the following (each within 100-150 words) 4×3 = 12

   (a) Define a thread. Why is computation faster in multithread?

   (b) What is IPC? How do processes communicate through message passing?

   (c) Mention the basic differences between the least recently

used and not recently used algerithm.

(d) How does an index sequential file differ from a sequential file?

(e) List only two problems in I/O device management.

3. Answer any three questions from the following (each within 200-250 words) $6 \times 3 = 18$

(a) Give a hardware solution to the critical section problem.

(b) What are the different scheduling criterion or goals of scheduling? Explain.

(c) Discuss the necessary conditions for occurence of deadlock.

(d) What is a page fault? How can it be handled?

(e) How are the storage spaces allocated to the files in contiguous allocation technique? Mention one advantage and one disadvantage for this technique.

4. Answer any four questions from the following (limit your answer within 300-400 words) $10 \times 4 = 40$

(a) What is real time scheduling? What are the different categories of real time tasks? Explain teh features of real time scheduling.

(b) Discuss any one algorithm used for deadlock detection. What are the common techniques used for deadlock recovery? Explain.

(c) Discuss the following memory allocation strategies with their advantages and disadvantages.

(i) Best-fit

(ii) First-fit

and (iii) Worst-fit

(d) What is DMA technique? What are its major advantages over programmed and interrupt-driven I/O? Discuss the sequence of events in transferring data using DMA controller.

(e) List the varoius services provided by an operating system and describe each in detail.

(f) Write short note (any two)

(i) System calls

(ii) Thrashing

(iii) Virtual Memory

(iv) Principles of I/O Management

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