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13MCA23

Second Semester MCA Degree Examination, Dec.2016/Jan.2017
Operating Systems

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions.***

1 a. With a neat diagram, explain how interrupts are handled. Write the steps involved in interrupt processing. **(10 Marks)**

b. Briefly explain the following :
i) Multiprocessor ii) Time sharing iii) Real Time iv) Distributed. **(10 Marks)**

2 a. What is an operating system? Explain briefly operating system services. **(10 Marks)**

b. What is a system call? Explain different types of system calls. **(10 Marks)**

3 a. Describe briefly PCB. Explain 2 – state process model and 5 – state process model with neat diagram. **(10 Marks)**

b. Differentiate between preemptive and non – preemptive scheduling. **(04 Marks)**

c. Five processes arrive at time 0, in the order given, with the length of the CPU – burst time given in milliseconds

Process	P1	P2	P3	P4	P5
Burst time	10	29	3	7	12

Draw Gantt chart and calculate the average waiting time and average turnaround time for the given processes using Round Robin method. Time Quantum = 10ms. **(06 Marks)**

4 a. Define Mutual Exclusion. Explain hardware approaches to enforce mutual exclusion. **(10 Marks)**

b. Explain the concept of messages with reference to message passing. **(06 Marks)**

c. Explain briefly Readers writers problem. **(04 Marks)**

5 a. What is a Deadlock? What are the necessary conditions for a Deadlock? **(06 Marks)**

b. What do you mean by Deadlock avoidance? Explain Banker's algorithm for deadlock avoidance. **(10 Marks)**

c. Explain the different between the internal and external fragmentation. **(04 Marks)**

6 a. What is a page fault? What action does the operating system take when a page fault occurs? Explain with the diagram. **(10 Marks)**

b. Consider the following page reference string.
7 0 1 2 0 3 0 4 2 3 0 3 2 1 2 0 1 7 0 1
How many page faults would occur in the case
i) FIFP ii) Optimal iii) LRU algorithms.
Assuming 3 frames. Note that initially all frames are empty. **(10 Marks)**

7 a. With the neat diagrams, explain the file allocation methods. **(10 Marks)**

b. Explain the different file access methods. **(06 Marks)**

c. Briefly write the different life attributes. **(04 Marks)**

8 a. Define disk scheduling. What are the disk scheduling methods available? Explain any four in detail with example. **(10 Marks)**

b. Write short notes on the following :
i) Cache memory ii) Levels of thread
iii) Thrashing iv) Free space Management. **(10 Marks)**

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