Reg. No. : | | | | | | | | | | |

Question Paper Code: 31484

B.E. / B.Tech. DEGREE EXAMINATION, NOVEMBER 2015

Fourth Semester

Information Technology

01UIT404 - PRINCIPLES OF OPERATING SYSTEMS

(Regulation 2013)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. State the fundamental idea behind a virtual machine.
2. Define context switch
3. What are the three requirements that must be satisfied by critical-section problem?
4. Name the various classical problems of synchronization.
5. What do you mean by swapping?
6. What is thrashing?
7. What are file attributes?
8. What do you mean by distributed file system? Give its purpose.
9. List the various registers in an I/O port.
10. Give the most common examples for tertiary-storage devices.

PART - B (5 x 16 = 80 Marks)

11. (a) (i) What are the types of system calls? Explain the functions of each. (10)

(ii) Explain the various states of a process. (6)

Or

(b) Describe in detail the interprocess communication. (16)

12. (a) Consider the following set of processes, with the length of the CPU-burst time given in milliseconds

Process	Burst time	Priority
P1	10	3
P2	1	1
P3	2	3
P4	1	4
P5	5	2

The processes are assumed to have arrived in order P1, P2, P3, P4, P5, all at time 0.

(i) Draw four Gantt charts illustrating the execution of these processes using FCFS, SJF, a non-preemptive priority (a smaller priority number implies a higher priority), and RR (quantum=1) scheduling.

(ii) What is the turnaround time of each process for each of the above scheduling algorithm? (16)

Or

(b) (i) Describe the necessary conditions for deadlock. (8)

(ii) Discuss the techniques involved in deadlock recovery. (8)

13. (a) Explain the most common techniques for structuring the page table. (16)

Or

(b) (i) Consider the page-reference string: 2 3 2 1 5 2 4 5 3 2 5 2. How many page faults occur for the FIFO, LRU and Optimal replacement algorithms, assuming three frames? (12)

(ii) Compare segmentation and paging. (4)

14. (a) Discuss the schemes for defining the logical structure of a directory. (16)

Or

(b) What are the various free space management techniques? Explain. (16)

15. (a) Describe the several services provided by the Kernel I /O subsystem. (16)

Or

(b) Explain the various process scheduling algorithms with suitable example. (16)