Reg. No. :

Question Paper Code: 31484

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2016

Fourth Semester

Information and Technology

01UIT404 - PRINCIPLES OF OPERATING SYSTEM

(Regulation 2013)

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1.   Define Context switch.

2.   Write the procedure of Remote Method Invocation in brief.

3.   Define Monitors.

4.   List the conditions that raises deadlock in multi-process system.

5.   What is an overlay?

6.   Define Thrashing.

7.   Differentiate absolute path from relative path.

8.   What are the advantages of the variation of linked allocation that uses a FAT to chain together the blocks of a file?

9.   What is tertiary storage?

10. Write brief note on Worm Disk.

PART - B (5 x 16 = 80 Marks)

11. (a) (i) Define cooperating process and discuss inter-process communication in detail. (8)

       (ii) Describe in detail the function of an operating system as a resource manager. (8)

Or

(b) (i) Describe with the help of a neat diagram the interaction of operating system with the hardware architecture. (8)

      (ii) Explain threading issue and threads library in detail. (8)

12. (a) Consider the following set of processes assigned with CPU burst time and arrival time in milliseconds (ms). Assume that the processes: P1, P2, P3, P4 and P5 have arrived in the order based on the Arrival time as given below.

Process	Burst Time (ms)	Priority	Arrival Time(ms)
P1	12	3	0
P2	7	2	1
P3	5	1	1
P4	6	4	2
P5	3	5	4

    (i) Illustrate the execution of the process using

        (1) Shortest Job First (SJF)

        (2) Pre-emptive priority

        (3) Non pre-emptive priority

        (4) Round Robin (Quantum =2)

    (ii) Evaluate the Turnaround time and Waiting time for each process for all algorithms. (16)

Or

(b) (i) Give a monitor solution for dining philosophers problem and explain. (8)

     (ii) Discuss Bankers algorithm for avoiding deadlock between processes. (8)

13. (a) (i) Consider the page reference string; 1, 2, 3, 2, 1, 4, 2, 6, 7, 1, 1, 2, 7, 8, 9, 2, 3, 1, 4 and 9. Deduce the page faults that would occur for LRU, FIFO and Optimal page replacement algorithms when the number of frames is three. (10)

(ii) Write short note on Linux memory management component. (6)

Or

(b) (i) Explain how logical memory address is translated into physical memory address in segmented memory management system. (8)

(ii) Compare and contrast contiguous and non-contiguous memory allocation. (8)

14. (a) (i) Explain directory structure in file system implementation. (8)

(ii) Compare windows NT-file system with Linux system-file system. (8)

Or

(b) Explain the following:

(i) Free space management (8)

(ii) Log-structured file system (8)

15. (a) (i) Discuss application I/O interface in detail. (8)

(ii) Explain how I/O system is managed in Linux system. (8)

Or

(b) Explain the following:

(i) Disk scheduling methods (8)

(ii) Swap-space management (8)

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