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

Question Paper Code : X 60379

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2020
Fourth Semester
Computer Science and Engineering
CS 2254/CS 45/CS 1253/10144 CS 405/080250012 – OPERATING SYSTEMS
(Common to Information Technology)
(Regulations 2008/2010)
(Also Common to PTCS 2254 – Operating Systems for B.E. (Part-Time) Fourth Semester – CSE – Regulations 2009)

Time : Three Hours | Maximum : 100 Marks

Answer ALL questions

PART – A **(10×2=20 Marks)**

1. What is PCB ? Specify the information maintained in it.
2. Differentiate a thread from a process.
3. What is turnaround time ?
4. State the four necessary condition for a deadlock situation to arise.
5. What is meant by address binding ? Mention the different types.
6. What is virtual memory ? Mention its advantages.
7. What is meant by mounting ? Give its advantage.
8. How disk free space can be managed using bit vectors ? Give an example.
9. Define rotational latency.
10. Write a brief note on RAID.

PART – B **(5×16=80 Marks)**

11. a) Explain in detail the types of systems calls provided by a typical operating system. **(16)**

(OR)

b) Explain the following :

i) Communication in client-server systems. **(8)**

ii) IPC in Linux. **(8)**

12. a) Consider the following set of processes, with the length of the CPU – burst time given in miliseconds.

Process	Burst time
P1	10
P2	1
P3	2
P4	5

i) Draw Gantt's chart illustrating the execution of these processes using FCFS, SJF and Round Robin (with quantum = 1) scheduling techniques. **(8)**

ii) Find the turn around time and waiting time of each process using the above techniques. **(8)**

(OR)

b) i) Explain dining philosopher's synchronization problem and propose a solution for it. **(8)**

ii) Explain the techniques used to prevent deadlock. **(8)**

13. a) i) Explain the concept of paging in detail with necessary diagrams. **(8)**

ii) Describe the hierarchical paging technique for structuring page tables. **(8)**

(OR)

b) i) Consider the following page reference string :

2, 1, 0, 3, 4, 0, 0, 0, 2, 4, 2, 1, 0, 3, 2. How many page faults would occur if the working set policy were used with a window size of 4 ? Show when each page fault would occur clearly. **(4)**

ii) What is meant by thrashing ? Discuss in detail. **(12)**

14. a) i) List and explain the three common ways by which files can be structured. **(6)**

ii) Explain Linux file system in detail. **(10)**

(OR)

b) i) What is the role of Access matrix for protection ? Explain. **(6)**

ii) Explain Windows XP file system in detail. **(10)**

15. a) Why disk scheduling is necessary ? Explain the different seek optimization techniques. **(16)**

(OR)

b) Explain briefly about the levels of RAID. **(16)**