

AU – 2721

Fifth Semester B. E. (Information Technology) Examination

OPERATING SYSTEMS

Paper – 5 IT 01

(USC – 10730)

P. Pages : 3

Time : Three Hours]

[Max. Marks : 80

- Note :** (1) Due credit will be given to neatness and adequate dimensions.
(2) Assume suitable data wherever necessary.
(3) Illustrate your answer wherever necessary with the help of neat sketches.
(4) Use pen of Blue/Black ink/refill only for writing the answer book.

1. (A) Explain in detail the process management and the file management services provided by an operating system. 7
(B) What are the co-operating process ? What are the reasons to provide an environment to allow process co-operation ? 7

OR

2. (A) What are the resources used while reaction of the thread ? How process creation and thread creation differ from each other ? 7
(B) What is system call ? List and explain the process control system calls. 7

3. Suppose that the following process arrive for execution at the times indicated. Each process will run the listed amount of time in answering the question, use non primitive scheduling :

Process	Arrival Time	Burst Time
P ₁	0.0	8
P ₂	0.4	4
P ₃	1.0	1

- (1) Draw the Gantt chart for FCFS and SJF.

AU-2721

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- (2) What is average turn around time for these processes with FCFS scheduling algorithm and with SJF scheduling algorithm.
- (3) Compute the average turn around time will be if the CPU is left idle for the first 1.0 unit of time and SJF. Scheduling is used. Remember that process P_1 and P_2 are waiting during this idle time.
- (4) Find out which algorithm is efficient to serve all requests. 13

OR

4. (A) What are CPU scheduler and scheduling criteria ? 6
- (B) What is meant by 'race condition' ? Why race condition occurs ? Give an algorithm to avoid race condition between two processes. 7
5. (A) Describe the function of buffer cache giving its advantages and disadvantages explain with suitable example, how a disk block is written using buffer cache. 7
- (B) What is segmentation ? Explain in brief the segmentation hardware ? 6

OR

6. (A) What is paging ? Explain principle of operation of paging with neat diagram. 7
- (B) Differentiate :
- (1) Paging and Demand paging
 - (2) Swapping and Thrashing
 - (3) Logical address and Physical address. 6
7. (A) Given a memory partition :
- 100 kB, 500 KB, 200 KB, 300 KB, 600 KB How would each of the first fit, best fit and worst fit algorithm place process of 212 kB, 417 KB, 112 KB and 426 KB ? Which algorithm makes the most efficient use of memory ? 7

- (B) What are shared files ? How shared files are implemented ? How the deletion operation is dealt with shared files ? 7

OR

8. (A) How free disk space is managed ? Give different methods for management of free disk space with merits and demerits ? 7

- (B) What is buffer header ? Explain. 7

9. (A) Explain different disk scheduling algorithms in detail. 7

- (B) Explain I/O hardware and bus structures. 6

OR

10. (A) What is swap space ? How it is managed ? 7

- (B) Explain RAID structure in detail. 6

11. (A) Describe Linux virtual file system in detail. 7

- (B) Explain the functions and implementation of :

(1) The block buffer cache

(2) The request manager used under Linux for block devices. 6

OR

12. (A) Explain components of Linux system. 7

- (B) Explain various parts of process context in Linux. 6

