Total No. of Questions : 10]

SEAT No. :

P3638

[Total No. of Pages : 3

[5560] - 594
T.E. (IT)
OPERATING SYSTEM
(2015 Course) (Semester - I) (314444)

Time : 2½ Hours] *[Max. Marks :70*

Instructions to the candidates:

1) ***Attempt Q. 1 or Q. 2, Q. 3 or Q. 4, Q. 5 or Q. 6, Q. 7 or Q. 8, Q.9 or Q.10.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data, if necessary.***

Q1) a) Describe in brief the evolution of Operating System. **[5]**

b) Draw process state transition diagram and explain each state in it. **[5]**

OR

Q2) a) Specify the role of long term, short term and medium term scheduler in operating system with diagram. **[5]**

b) Explain the difference between a monolithic and a microkernel with advantages and disadvantages. **[5]**

Q3) a) Write and explain the deadlock free solution for a Dinning Philosopher problem. **[5]**

b) Define thread? List and explain different thread scheduling approaches. **[5]**

OR

Q4) a) What is critical section? Give semaphore solution for producer-consumer problem. **[5]**

b) Write a short note on following (any two): **[5]**

i) Resource allocation graph

ii) Monitor

iii) Mutual exclusion

P.T.O.

Q5) a) Write a short note on Buddy System. **[6]**

b) For the following reference string **[12]**

0, 1, 3, 6, 2, 4, 5, 2, 5, 0, 3, 1, 2, 5, 4, 1, 0

Count the number of page faults that occur with 3 frames using FIFO, Optimal and LRU page replacement methods. Discuss the results.

OR

Q6) a) Explain following terms in brief (any two): **[4]**

i) Internal fragmentation

ii) External fragmentation

iii) Compaction

b) Elaborate the concept of demand paging with appropriate diagram. **[8]**

c) Describe the address translation mechanism in segmentation with suitable diagram. **[6]**

Q7) a) Suppose that a disk drive has 400 cylinders, numbered 0 to 399. The drive is currently serving a request at cylinder 160. The queue of pending requests, in FIFO order, is 370, 30, 390, 130, 310, 170, 340, 180. Starting from the current head position, what is the total distance (in cylinders) that the disk arm moves to satisfy all the pending requests, for each of the following disk scheduling algorithms? **[12]**

i) FCFS ii) SSTF

iii) SCAN iv) LOOK

(Assume that the head is initially moving towards track number 399)

b) Enlist the characteristics of block and character devices? Explain each with suitable example. **[4]**

OR

Q8) a) Discuss at least two techniques for performing I/O. **[8]**

b) List and explain any two file allocation mechanisms. **[8]**

Q9) a) What is kernel module? Explain the process for inserting a module in the kernel. **[8]**

b) State and explain different Linux inter-process communication mechanisms. **[8]**

OR

Q10) a) Explain the steps in Linux booting process. **[8]**

b) Write a short note on the following (any two): **[8]**

i) Linux File System

ii) Linux memory management

iii) Linux process management

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