Total No. of Questions : 10]

SEAT No. :

P1764

[Total No. of Pages : 3

[5460] - 594
T.E. (IT)
OPERATING SYSTEM
(2015 Pattern) (Semester - I)

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) Elaborate the functions of operating system. **[5]**

b) Specify the role of schedulers in operating system. **[5]**

OR

Q2) a) State command line arguments in shell with example. **[5]**

b) Differentiate between user - level and kernel - level threads. **[5]**

Q3) a) Describe in brief different IPC mechanisms. **[5]**

b) Explain following terms : **[5]**

i) Critical Section.

ii) Race Condition.

OR

Q4) a) Write a semaphore solution for readers - writers problem. **[5]**

b) Explain with an appropriate example, how resource allocation graph determines a deadlock. **[5]**

P.T.O.

Q5) a) For the following reference string.
6,5,1,2,5,3,5,4,2,3,6,3,2,1,2
Count the number of page faults that occur with 3 frames using FIFO, Optimal and LRU page replacement methods. Discuss the result. **[12]**

b) Explain segmentation with suitable daigram. **[6]**

OR

Q6) a) Free memory holes of sizes 15 K, 10K, 5K, 25K, 30K, 40K are available. The processes of size 12K, 2K, 25K, 20K are to be allocated. How processes are placed using first fit, best fit and worst fit partitioning algorithm. Calculate internal and external fragmentation. **[10]**

b) Explain the concept of virtual memory with suitable diagram. **[8]**

Q7) a) A disk drive has 200 cylinders, numbered 0 - 199. The drive is currently serving the request at cylinder 63. The queue of pending requests in FIFO order is 27,129,110,186,147,41,10,64,120. Starting from the current head position what is the total distance that disk arm moves to satify all the pending requests for the following disk scheduling algorithms. **[12]**

i) FCFS

ii) C-SCAN

iii) C - LOOK

iv) SSTF

b) Explain I/O buffering mechanism. **[4]**

OR

Q8) a) Write a short note on the following **[8]**

i) Directory Structure

ii) File sharing

b) Explain free space management technique. **[8]**

Q9) a) Explain in detail Linux Booting process. **[8]**

b) List and explain different inter - process communication mechanisms in Linux operating system. **[8]**

OR

Q10) Write short note on following : **[16]**

a) Memory Management in Linux

b) Linux File system.

c) Kernel Modules

d) Process Scheduling in Linux.

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