Total No. of Questions : 10]

SEAT No. :

P3323

[Total No. of Pages : 3

[5353]-198

T.E. (Information Technology) (Semester - II)

OPERATING SYSTEM

(2012 Pattern)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7or Q8, Q9 or Q10.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right side indicate full marks.***
4) ***Assume Suitable data if necessary.***

Q1) a) Explain micro kernel design approach? How will you decide that your requirement meets the criteria For micro kernel design? **[5]**

b) What resources are used when thread is created? How do they differ From those used when a process is created? **[5]**

OR

Q2) a) Explain the concept of Context Switching with the help of neat diagram. **[5]**

b) Discuss multilevel Feedback queue scheduling in UNIX. **[5]**

Q3) a) For the table given below, draw a Gantt chart illustrating the process execution using non preemptive priority scheduling. A larger no indicates higher priority. Calculate average waiting time. **[5]**

Process	Arrival Time	Burst Time	Priority
A	0	5	4
B	2	4	2
C	2	2	6
D	4	4	3

b) Explain message passing system For IPC and synchronization. **[5]**

OR

P.T.O.

Q4) a) Write the structure of producer and consumer process in bounded buffer problem using semaphore and discuss how critical section requirements are fullfilled. **[5]**

b) Provide two programming examples in which multithreading provides better performance than a single-threaded solution. **[5]**

Q5) a) Consider the page reference string with 3 frames. **[9]**

A ,B, C, D, E, C, D, A, F, G, H, G, H, I, G, H, I, E, D, E, D, B

Calculate the no of page Faults For Following page replacement algorithms.

i) FIFO

ii) OPTIMAL

iii) LRU

b) Describe how Linux implements the following aspects of memory management. **[9]**

i) Virtual memory addressing

ii) Page allocation

iii) Page replacement algorithm

iv) Kernel memory allocation

OR

Q6) a) Explain Belady's anomaly with suitable example. **[4]**

b) What is cause oF thrashing? How does the system detect thrashing? How the system can eliminate it? **[6]**

c) Explain the address translation mechanism in paging and segmentation. **[8]**

Q7) a) Assume a disk with 200 tracks and the disk request queue has random requests in it as Follows: 98,183,37,122,14,124,65,67. Find the no of tracks traversed and average seek length If **[8]**

i) FCFS

ii) SSTF

iii) SCAN

iv) C-SCAN is used and initially head is at track no 53.

b) Explain different file organization techniques. **[8]**

OR

Q8) a) Why I/O buffering is needed? State and explain different approaches of I/O buffering. **[6]**

b) Is disk scheduling, other than FCFS, useful in a single user environment. Explain u r answer. **[6]**

c) What are different disk performance parameter? **[4]**

Q9) a) With neatly labelled diagram explain embedded Linux system architecture. **[8]**

b) Explain following operations wrt NACH OS. **[8]**

i) Modes of operations

ii) Multiprogramming

OR

Q10) Write short notes on : **[16]**

a) Ubuntu EDGE

b) Android OS

c) Service Oriented OS