Total No. of Printed Pages:2

SUBJECT CODE NO:- P-171
FACULTY OF ENGINEERING AND TECHNOLOGY
T.E.(CSE/IT) Examination MAY/JUNE-2016
Operating System
(Revised)

[Time: Three Hours] **[Max Marks:80]**

"Please check whether you have got the right question paper."

N.B 1) Question No.1 from section A and Question No.6 from section B are compulsory.
2) Solve any two questions from each section from the remaining question.

Section A

Q.1 Solve any five 10

a) Define user mode and kernel mode. Why two modes are required?
b) What are the drawbacks of monolithic system?
c) What is a semaphore?
d) What is a process? List the various state of a process.
e) What is relation between path name and a working directory?
f) Differentiate between field and record.
g) Differentiate between thread and process.
h) What are the types of system calls?

Q.2 a) Explain batch system and multi programmed system in detail. 07
b) What is a monitor? Explain solution for producer-consumer problem using monitor. 08

Q.3 a) Explain essential features of following structure of O.S. 07
1) Monolithic system
2) Layered system
3) Micro kernels
4) Client server models.

b) Consider following process with length of CPU burst time in milliseconds: 08

Process	Burst time
P_1	6
P_2	10
P_3	3
P_4	4
P_5	2

1) Draw Gantt Charts illustrating execution of these processes for round robin scheduling (quantum=2)& FCFS.
2) Calculate waiting time for each process for each scheduling algorithm.
3) Calculate average waiting time for each scheduling algorithm.
Consider all processes arrived in order P_1,P_2,P_3,P_4,P_5 at time zero

Q.4 a) What are the methods of free space management of disk? 07
b) Explain the following file allocation methods. 08
1) Contiguous allocation
2) i-node

Q.5 a) Explain readers & writers problems? Give its solution with semaphores. 08
b) Explain file system performance in detail. 07

Section-B

Q.6 Solve any 5 10

1) What is demand paging?
2) Differentiate between fixed partition and variable partitions.
3) What is page fault and page fault frequency?
4) Why device drivers are required?
5) Describe in short: magnetic disk, DVDs.
6) What are the conditions for deadlock?
7) Mention various recovery methods for deadlock.
8) Write any 4 features of windows 7.

Q.7 a) Explain following page replacement algorithm: 08
1) Optimal page replacement
2) FIFO page replacement
b) Free memory holes of sizes 15K, 10K, 5K, 25K, 30K and 40K are available. The processes of sizes 12K, 2K, 25K & 20K are to be allocated. How the processers are placed in first fit, best fit and worst fit? Calculate internal & external fragmentation. 07

Q.8 a) Explain device drivers in detail. 07
b) Suppose a disk drive has 400 cylinders, numbered 0 to 399. The driver is currently serving a request at cylinder 143 & previous request was at cylinder 125. The queue of pending request in FIFO is: 86,147,312,91,176,58,305,212,100,112. Starting from current head position what is the total distance in cylinder that the disk arm require to satisfy all pending requests for each of the following algorithms? 08
1) SSIF 2) SCAN 3) C-SCAN

Q.9 a) Explain deadlock avoidance with banker's algorithm in detail. 08
b) Explain architectural features of windows 7. 07

Q.10 a) Explain file system of windows 7. 07
b) What is segmentation? Explain basic segmentation method. 08