B.E. Computer Science & Engineering Fifth Semester

CSE505 - Operating System

P. Pages : 2 **GUG/W/18/1610**

Time : Three Hours * 1 2 6 9 * Max. Marks : 80

Notes : 1. All questions carry equal marks.
2. Illustrate your answers wherever necessary with the help of neat sketches.
3. Due credit will be given to neatness and adequate dimensions.
4. Assume suitable data wherever necessary.

1. a) What is operating System? Explain the concept of time sharing. **8**

b) State and explain different operating System Services. **8**

OR

2. a) What is meant by System call? How it is used by application Program during execution. Also explain its types. **8**

b) Compare Symmetrical and Asymmetrical multiprocessing System. **4**

c) What is multi programming? Explain. **4**

3. a) State and explain different prosses states. **4**

b) Differentiate between Pre-emptive and Non-preemptive scheduling. **4**

c) Discuss multiple processor scheduling with diagram. **8**

OR

4. a) Consider the following 4 processes with CPU burst and arrival time given in milliseconds. **8**

Process	Arrival Time	Burst Time	Priority
P_1	0	8	2
P_2	1	4	1
P_3	2	9	3
P_4	3	5	4

Calculate the average waiting time and turnaround time for following scheduling strategies.

i) FCFS ii) SJF

iii) Round Robin Algorithm iv) SRJF

b) Explain context switching along with process control Block. **8**

5. a) Under what circumstances do page fault occur? Describe the actions taken by the operating System when a page fault occurs. **8**

b) Consider the following page references string. **8**

4 3 2 1 4 3 5 4 3 2 1 5

Assume page frame size =3, how many page fault will occur for:

i) FIFO ii) LRU

iii) OPTIMAL Algorithm iv) LFU

OR

6. a) What is thrashing? What is the cause of thrashing? How can the System eliminate the Problem of thrashing? **8**

b) What is need of swapping? Describe Swapping with example. State its merits. **8**

7. a) What is deadlock? What are the necessary condition for its occurrence. **6**

b) A System with following processes and resources units. **10**

i) Check the System for safe state and find sequence.

ii) Process P1 requests for one more instances of return type x and two instances of return type y can the request be granted?

Allocation			
P_0	x	y	z
P_1	0	1	0
P_2	2	0	0
P_3	3	0	2
P_4	2	1	1
P_5	0	0	2

Max		
x	y	z
7	5	3
3	2	2
9	0	2
2	2	2
4	3	3

Available		
x	y	z
3	3	2

OR

8. a) What is Semaphore? Explain different types of Semaphore. **8**

b) What is interprocess communication? How it can be achieved? **8**

9. a) Discuss different file organization in detail. **8**

b) Enlist and explain the access methods supported by file System. **8**

OR

10. a) What are the major threats for the System? Discuss. **8**

b) Write a short note on: **8**

i) Trojan horse technique in security.

ii) Worm.

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