

Mid Semester Examination  
School of Computer Engineering  
KIIT UNIVERSITY, BHUBANESWAR

Time: 2hrs

Full Mark: 25

*[Question No. 1 is compulsory, and answer any three from the remaining questions]*

1.

[2 X 5]

- a) Write any two differences between multi-programming operating system and real time operating system.
- b) Do you mean progress satisfies bounded waiting condition for processes competing for critical section? Justify.
- c) Which CPU scheduling algorithm results into minimum average waiting time? Justify.
- d) How do you make WAIT operation atomic?
- e) Consider the following code given below:

Semaphore wrt = 1;

int readcount = 0;

Writer()	Reader()
<pre> {     6. P(wrt);     7. write();     8. V(wrt); }         </pre>	<pre> {     1. readcount++;     2. if (readcount == 1) P(wrt);     3. read();     4. readcount--;     5. if (readcount == 0) V(wrt); }         </pre>

Write down the execution sequence for which mutual exclusion is violated between readers and writers. Modify the code to implement readers-writers solution.

2. Discuss the process state transition diagram mentioning the transition wait, preemptive & non-preemptive scheduling. Explain multilevel priority feedback queue. [5]

3. i) Explain different contents of process control block (PCB) with their justification. [2.5]

ii) Explain multi threading operating system. How is it different from time sharing operating system? [2.5]

4. For the given data find out average wait time and sequence of completion of the processes using Round Robin and SRTF (SJF with preemption) algorithm. [5]

Process	Arrival Time	CPU Execution Time
P1	0	10
P2	3	04
P3	16	08
P4	17	05
P5	20	12
P6	30	03

Note: Round Robin Scheduling Algorithm time slice is 2 unit of time.

5. Write the algorithm to implement Remote Procedure Call mechanism and "exactly once" semantic. Does the algorithm implement this semantic correctly even if the "ACK" message is return back to the client and lost due to a network problem? Describe the sequence of messages to preserve "exactly once" semantics. [5]

OR

What is semaphore? Explain WAIT and SIGNAL operation on semaphore. Write the deadlock free solution to dining philosopher problem. [5]