2015

M.Sc.

3rd SEMESTER EXAMINATION

COMPUTER SCIENCE

PAPER—COS-301

Full Marks : 50

Time : 2 Hours

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

(*Advanced Operating System*)

Answer any *five* questions : 5×10

1. (a) What is process ?

(b) Explain with diagram different state of process.

(c) Consider the following process that arrive at time O, with length of CPU burst in mili seconds. If the time quantum is 4 mili seconds, calculate the average waiting time and average turn-around time :

Process	*Burst time*
P_1	24
P_2	3
P_3	3

2+5+3

2. (a) What is monitor ?

(b) Explain dining-philosophers solution using monitor.

(c) Define wait and signal operations of semaphore that don't suffer from busy waiting. 2+5+3

3. (a) What is dead lock ?

(b) What are the necessary conditions of dead lock ?

(c) Consider the following system with five process P_0 through P_4 and three resources type A, B, C :

ALLOCATION			
	A	B	C
P_0	0	1	0
P_1	2	0	0
P_2	3	0	2
P_3	2	1	1
P_4	0	0	2

MAX			
	A	B	C
P_0	7	5	3
P_1	3	2	2
P_2	9	0	2
P_3	2	2	2
P_4	4	3	3

AVAILABLE		
A	B	C
3	3	2

(i) Is the system is in safe state ?

(ii) If process P_1 request (1, 0, 2) the request will be granted or not ?

2+3+5

4. (a) Suppose the following process arrived for execution at the time indicated : 3+3

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

What is average waiting time and turn around time for the following :

(i) FCFS ; *and* (ii) Preemptive SJF algorithm.

(b) Explain deadlock prevention and deadlock avoidance. 4

5. (a) What is race condition ? How can it be avoided ?

(b) Explain Shortest Seek Time First (SSTF) disc scheduling ? Why SSTF tries to favor middle cylinders over the inner and outer most cylinders ? 4+(3+3)

6. (a) Write the different memory allocation strategy ? Out of them which strategy is best and why ? Justify your answer.

(b) Write the difference between page and frame ?

(c) Write a short note on 'Demand paging' ?

(d) What is address space and what is memory space ? 4+2+2+2

7. Write short notes (any *two*) : 2×5

(a) Real time operating system ;

(b) Distributed operating system ;

(c) Virtual memory management.

[Internal Assessment — 10 Marks]