2016

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 OS

Answer any *four* questions : 4×10

1. (a) What is PCB ?

(b) Explain with the diagram different state of process.

(c) Consider the following processes with its corresponding arrival and burst time :

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

What is the average waiting and turn around time for preemptive QJF scheduling algorithm.

2+4+4

2. (a) What is semaphor ?

(b) Explain dining-philosophers solution using semaphore.

(c) What is the limitation at the simple implementation of wait() and signal() operation and row can it be solved.

2+3+5

3. (a) What is claim edge ?

(b) Explain safety algorithm.

(c) Consider the following system with five processes P_0, P_1, P_2, P_3 and P_4 and three resources type A, B and 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) What is Belady's anomaly ? Explain with an example.

(b) Consider the reference string :

7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1.

Calculate number of page faults for LRU and optimal page replacement algorithm.

3+7

5. (a) What is the difference between logical and physical address ?

(b) Explain segmentation hardware with diagram.

(c) Consider a paging hardware with TLB where TLB access time is 20 nanosecond and memory access time is 100 nanosecond. Calculate effective access time for TLB hit ratio 0.80 .

3+4+3

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

(a) Context switch ;

(b) Deadlock prevention ;

(c) Distributed OS.

[Internal Assessment — 10 Marks]