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B.Sc/3rd Sem (H)/COMP/22(CBCS)

2022

COMPUTER SCIENCE (Honours)

Paper : C 6-T

(Operating Systems)

[CBCS]

Full Marks : 40

Time : Two Hours

*The figures in the margin indicate full marks.
Candidates are required to give their answers
in their own words as far as practicable.*

Group - A

1. Answer any *five* questions : 2×5=10

- (a) What do you mean by real time operating system?
- (b) What is the difference between serial processing and batch processing?
- (c) What is system call?
- (d) What are drawbacks of paging scheme?
- (e) What is spooling?
- (f) In a paging scheme, the logical address space of 64K, physical memory size is 32K and page size 4K, then find the number of bits for offset, page number and frame number.

P.T.O.

(2)

- (g) What is difference between process and program?
(h) Define kernel and shell.

Group - B

Answer any *four* questions : $5 \times 4 = 20$

2. Define thrashing. Find the page fault for the reference :
3, 0, 4, 2, 0, 1, 3, 4, 0, 2, 5, 3 using the LRU page
replacement algorithm for three page frames. $2+3$
3. Explain Belady's anomaly with an example.
4. What is safe and unsafe state? Check whether the state
of the process is safe or not.

Process	Resource allocation	Max Need	Available
A	2	6	2
B	3	8	
C	1	3	

$2+3$

5. What is starvation? Explain with example.
6. Find the average waiting time and turn around time for
the following :

Process	Arrival Time	Run Time
P1	2	4
P2	0	8
P3	1	7
P4	3	2

Using Shortest Remaining Time First Algorithm. 5

(3)

7. What do you mean by process synchronization? What are the necessary conditions to solve the critical section problem? 2+3

Group - C

Answer any *one* question : 10×1=10

8. Define semaphore. What is concurrent process? Explain the reader-writer's problem and solve using semaphore. 2+2+6

9. Write short notes on : 5+5

(i) Segmentation

(ii) Deadlock
