2021
BCA
[HONOURS]
(CBCS)
(B.Sc. Third Semester End Examination-2021)
PAPER-C6T

Full Marks: 40   ***Time: 02 Hrs***

The figures in the right hand margin indicate marks
Candidates are required to give their answers in their own words as far as practicable
Illustrate the answers wherever necessary

Group-A

1. Answer any five questions of the following: 5x2= 10

a. What is the disadvantage of priority scheduling? How it can be avoided?

b. Why are page size always power of 2?

c. What is dirty bit?

d. What is the difference between starvation and deadlock?

e. What are the major problems of critical section?

f. Why is a thread called light weight process?

g. What is race condition?

h. Differentiate between internal fragmentation and external fragmentation.

Group-B

Answer any four questions of the following: **5x4 = 20**

2. Consider the following page reference starting

   1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6.

   How many page faults would occur for LRU replacement algorithm assuming three frames are empty?

3. Find the average turn around time using preemptive SJF

Process	Arrival time	Execution Time
A	0	4
B	2	7
C	3	3
D	3.5	3
E	4	5

4. Given memory position of 120 K, 520K, 220K, 320K and 620K. How would best fit algorithm places the processes of 232K, 437K, 132K and 446K?

5. What is paging? What fragmentation occurs in paging and why?

6. State and prove Belady's anomaly.

7. What is PCB? What are the motivations behind using a multi-threaded process instead of multiple processes? Differentiate between the user-level thread and the kernel-level thread.

Group –C

Answer any one questions of the following: **10x1 = 10**

8. Consider the following situation

Process	Allocation A B C D	Max. Need A B C D	Arailase A B C D
P_0	0 0 1 2	0 0 1 2	1 5 2 0
P_1	1 0 0 0	1 7 5 0	
P_2	1 3 5 4	2 3 5 6	
P_3	0 6 3 2	0 6 5 2	
P_4	0 0 1 4	0 6 5 6	

   i) What is the content of the matrix need?

   ii) Is the system in a safe state?

   iii) If a request from process P1 arrives for (0, 4, 2, 0), can the request be granted?

9. When do page faults occur? Describe the action taken by the one operating system when a page fault occurs?

   What do you mean by page reference string? Suppose a process accesses the following addresses at a particular time interval:0100, 0432, 0101, 0612, 0102, 0103, 0104, 0101, 0611, 0102, 0103, 0104, 0101, 0601, 0101, 0102, 0609, 0102, 0105. Assume a page size=100 bytes.

   i) What will be the page reference string for the addresses?

ii)   Considering the above page reference string, calculate the page fault rate for the LRU algorithm, assuming the number of frames =3.   1+3+1+2+3