

Total No. of Questions – [03]

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G.R. No.

PAPER CODE

0223-239 (BSE)

May 2023 (ENDSEM) EXAM
S.Y. B.TECH (COMPUTER ENGINEERING)
(AY 2022-23 SEMESTER - II)

COURSE NAME: OPERATING SYSTEM

COURSE CODE: CSUA22204

(PATTERN 2020)

Time: [1Hr]

[Max. Marks: 30]

Instructions to candidates:

- 1) Use of scientific calculator is allowed
- 2) Use suitable data where ever required
- 3) All questions are compulsory

Question No.	Question Description	Max. Marks	CO mapped	BT Level
Q.1	a) Differentiate between binary and counting semaphores with clear description of their usability	[4]	[CO4]	[Understand]
	b) Interpret the below program and describe possible outcomes of the same. <pre> #include <stdio.h> #include <assert.h> #include <pthread.h> void *mythread(void *arg) { printf("%s\n", (char *) arg); return NULL; } Int main(int argc, char *argv[]) { pthread_t p1, p2; int rc; printf("main: begin\n"); rc= pthread_create(&p1, NULL, mythread, "A"); assert(rc == 0); rc= pthread_create(&p2, NULL, mythread, "B"); assert(rc == 0); rc = pthread_join(p1, NULL); assert (rc==0); rc = pthread_join(p2,NULL); </pre>	[6]	[CO4]	[Apply]

```
assert (rc==0);
printf("main: end\n");
return 0;
}
```

OR

c) Consider the following snapshot of a system:

Processes	Allocation			Max			Available		
	A	B	C	A	B	C	A	B	C
P ₀	1	1	2	4	3	3	2	1	0
P ₁	2	1	2	3	2	2			
P ₂	4	0	1	9	0	2			
P ₃	0	2	0	7	5	3			
P ₄	1	1	2	1	1	2			

- I) Calculate Need Matrix
- II) Is the system in a safe state use Bankers Algorithm

[6]

[CO4]

[Apply]

Q.2

a) Describe the step by step process of writing to the file.

[4]

[CO5]

[Understand]

b) Consider a disk queue with requests for I/O to blocks on cylinders 98, 183, 41, 122, 14, 124, 65, 67. The head is initially at cylinder number 53. The cylinders are numbered from 0 to 199. Apply FCFS Disc scheduling algorithm and show the servicing of the requests with the total head movement (in number of cylinders) incurred while servicing these requests.

[6]

[CO5]

[Apply]

OR

c) Consider the given disk request sequence for a disk with 100 tracks as 45, 21, 67, 90, 4, 89, 52, 61, 87, 25, with head pointer starting at 50. Apply SSTF Disc scheduling algorithm and show the servicing of the requests with the total head movement (in number of cylinders) incurred while servicing these requests.

[6]

[CO5]

[Apply]

Q.3

a) Explain Little's Law with example.

[4]

[CO6]

[Understand]

b) "Using Checksum increases the time and space overheads for the storage systems" Do you agree with above statement. Justify your answer.

[6]

[CO6]

[Apply]

OR

c) "Checksums are useful in preserving the data integrity" Examine the above statement with example.

[6]

[CO6]

[Apply]