VIT

Vellore Institute of Technology

(Deemed to be University under section 3 of UGC Act, 1956)

Continuous Assessment Test I – September 2022

Programme	:	M.Tech. Integrated (Business Analytics)	Semester	:	Fall 2022-23
Course	:	Operating Systems	Code	:	SWE3001
			Class Nbrs	:	CH2022231000986 CH2022231000988
Faculty	:	Dr. L. Shyamala, Dr. S. Renuka Devi	Slot	:	C1+TC1
Time	:	90 Minutes	Max. Marks	:	50

Answer All Questions

Q.No.	Sub. Sec.	Question Description	Marks
1		Distinguish Loadable Kernel structure with Microkernel architecture. Which architecture is more suitable for embedded systems? Justify your answer.	10

2		In a microkernel operating system, does the following C code perform any system call? Justify your answer with a detailed description about the significance of dual mode in the execution procedure of the below C code.
		main()
		{
		int i,n;
		scanf("%d\n",&n);
		for (i=0; i<n; i++)
		printf("%d\n", i);
		}
			10

3		Choose any five system calls of your own and mention its significance. Explain in detail about the various process states and map the chosen system call to the respective process states.	10

4.		Explain the step by step execution of the given program and compute the output of the same.
		1. #include<stdio.h>
		2. #include<unistd.h>
		3. #include<sys/wait.h>
		4. void main()
		5. {
		6. int ret_val;
		7. printf("A");
		8. ret_val=fork();
		9. printf("B");
		10. if(ret_val==0)
		11. {
		12. fork();
		13. printf("C");
		14. wait(NULL);
			10

```
15. }
16. else if(ret_val>0)
17. {
18. printf("D");
19. wait(NULL);
20. }
21. Else
22. printf("Error in fork()");
23. }
```

5. Consider a clinic with only one physician. Assume 5 patients arrive at the clinic and the details of their arrival time and the expected consulting time are given below. **10**

Patient ID	Arrival Time (Clock Time)	Expected Consulting Time (in mins)
P1	5.00pm	5
P2	5.03pm	6
P3	5.07pm	3
P4	5.03pm	5
P5	5.05pm	4

a. Give a pictorial representation of the sequence of patients being consulted by the Doctor for both the strategies.:
   i. Arrival time to the clinic. (2 marks)
   ii. Expected shortest consultation time (considering with arrival time). (2 marks)

b. Which of the above mentioned strategies results in the minimum average waiting time and turnaround time ? (6 marks)

⇔⇔⇔