R22

Code No: 184BZ

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech II Year II Semester Examinations, December – 2024/January -2025

OPERATING SYSTEMS

(Common to CSE, IT, CE(SE), CSE(CS), CSE(DS), AI&DS, CSD)

Time: 3 Hours **Max. Marks: 60**

Note: This question paper contains two parts A and B.
i) **Part- A** for 10 marks, ii) **Part - B** for 50 marks.

- Part-A is a compulsory question which consists of ten sub-questions from all units carrying equal marks.
- Part-B consists of **ten questions** (numbered from 2 to 11) **carrying 10 marks each**. From each unit, there are two questions and the student should answer one of them. Hence, the student should answer five questions from Part-B.

PART- A

(10 Marks)

1.a)	Distinguish between process and program.	[1]
b)	How is load balancing done in distributed systems?	[1]
c)	What is mutual exclusion?	[1]
d)	What is job queue?	[1]
e)	What is critical section?	[1]
f)	What are condition variables?	[1]
g)	What is logical address?	[1]
h)	What is dynamic linking?	[1]
i)	Give syntax for write() system call.	[1]
j)	What are file properties?	[1]

PART-B

(50 Marks)

2.a) What are parallel systems? What are its advantages and disadvantages?
b) What are hard real time systems? Give some examples for it. [5+5]

OR

3.a) What are system calls? How are they handled by operating system?
b) What are operating system services? Explain them in detail. [5+5]

4. Simulate SJF (preemptive and non preemptive) and priority (preemptive and non preemptive) scheduling algorithms on following data and compute average waiting time: [10]

Process ID	ARRIVAL TIME	BURST TIME	PRIORITY
P01	0	8	3
P02	2	9	1(HIGHEST PRIORITY)
P03	4	4	2
P04	5	6	4
P05	6	2	5

OR

5.a) What is deadlock? How can it be prevented?
b) Discuss about methods for handling Deadlock Detection. [5+5]

6. What are monitors? Give solution to dining philosophers problem using monitors. [10]

OR

7. Explain interprocess communication through shared memory concept. [10]

8. Simulate page replacement algorithms on following data using three free frames and specify number of page faults: 1,2,3,4,3,2,3,4,5,6,5,6,7,2,3,4. [10]

OR

9. What is segmentation? Explain address translation scheme in segmentation. [10]

10. List and explain various file directory structures. [10]

OR

11.a) Explain free space management techniques.
b) Explain file access methods. [5+5]

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