

**R22**

Code No: 183BV

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

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

OPERATING SYSTEMS

(Common to CSE(AI&ML), CSE(IOT), AI&ML)

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) What is symmetric multiprocessing? [1]
- b) What is device queue? [1]
- c) What is turnaround time? [1]
- d) What is resource allocation graph? [1]
- e) How to create a pipe for IPC? [1]
- f) What is critical region? [1]
- g) What is stub? [1]
- h) What is reference bit? [1]
- i) What are unstructured files? [1]
- j) What is ACL? [1]

**PART-B**

**(50 Marks)**

2. Distinguish between multiprogramming, multitasking and multithreading. [10]

**OR**

- 3.a) What are real time systems? Give some examples where we make use of real time systems. [10]
- b) What are operating system services? Explain them. [6+4]

4. Simulate all scheduling algorithms on following data and compute average waiting time (time quantum=2ms): [10]

PID	ARRIVAL TIME	BURST TIME	PRIORITY
P01	0	7	1(HIGHEST PRIORITY)
P02	0	8	2
P03	2	6	4
P04	4	5	5
P05	5	4	3
P06	5	6	6

**OR**

5. What is multiple processor scheduling? Discuss various issues related to it. [10]

QA QA QA QA QA QA QA QA

6. Explain in detail interprocess communication through FIFO. [10]

**OR**

7.a) Discuss about synchronization hardware. [5+5]  
b) What are disadvantages of semaphores?

8. Explain segmentation in detail with a neat diagram. [10]

**OR**

9. Explain contiguous memory allocation techniques. [10]

10. Explain various file allocation techniques in detail. [10]  
11. Explain various directory structures in detail. [10]

**OR**

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QA QA QA QA QA QA QA QA

QA QA QA QA QA QA QA QA

QA QA QA QA QA QA QA QA

QA QA QA QA QA QA QA QA

QA QA QA QA QA QA QA QA