

Code No: 154BR**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****B. Tech II Year II Semester Examinations, February - 2024****OPERATING SYSTEMS****(Common to CSE, IT, CSBS, CSIT, ITE, CE(SE), CSE(CS), CSE(AI&ML), CSE(DS), CSE(IOT), CSE(N), AI&ML, CSD)****Time: 3 Hours****Max. Marks: 75****Note:** i) Question paper consists of Part A, Part B.

ii) Part A is compulsory, which carries 25 marks. In Part A, answer all questions.

iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A**(25 Marks)**

- 1.a) What is a hard real time system? [2]
- b) What is symmetric multiprocessor system? List out its characteristics. [3]
- c) Why do processes need to communicate? [2]
- d) What is the use of waitpid() system call? [3]
- e) What is a binary semaphore? [2]
- f) What is resource allocation graph? Why it is used? [3]
- g) What is internal fragmentation? [2]
- h) Distinguish between logical address and physical address. [3]
- i) What is a bit vector? [2]
- j) Explain acyclic graph directory structure. [3]

PART – B**(50 Marks)**

- 2.a) Distinguish between parallel and distributed systems.
- b) Write down the features of multi programmed and Time shared systems. [5+5]

OR

- 3.a) Summarize the evolution of Operating system in detail.
- b) Write down the services provided by an operating systems with respect to device management. [5+5]

- 4.a) What is a process? Distinguish between a process and a program.
- b) Explain the preemptive and non-preemptive scheduling criteria. [5+5]

OR

- 5.a) Simulate preemptive SJF(SRTF) and non-preemptive SJF scheduling algorithms on following data and compute average waiting time:

pid	Arrival time	Burst time
P01	0	8
P02	2	5
P03	4	2
P04	5	1
P05	6	6

- b) Briefly discuss about various operations performed on processes. [6+4]

QA QA QA QA QA QA QA G

QA 6. What is a deadlock? Explain various deadlock prevention strategies with brief illustrations. [10]

OR

7. What is process synchronization? How can it be achieved through monitors? Explain. [10]

QA 8. Simulate FIFO, LRU and optimal page replacement algorithms on the following reference string and find number of page faults (number of frames = 4) 1,2,3,2,1,2,3,4,5,6,7,3,4,5,6,3 [10]

OR

9. Explain segmentation memory management scheme with neat diagrams. [10]

10. List and explain various file allocation methods with their relative merits and demerits. [10]

QA 11.a) How file protection is achieved by operating system? [4+6]
b) Explain about lseek(), open() and read() system calls.

---ooOoo---

QA QA QA QA QA QA QA G

QA QA QA QA QA QA QA G

QA QA QA QA QA QA QA G

QA QA QA QA QA QA QA G