

KADI SARVA VISHWAVIDYALAYA
B.E. SEMESTER – IV EXAMINATION APRIL – 2025

Subject Code: CT404-N
Date: 28/04/2025

Time: 10:00 am to 01:00 pm

Subject Name: Operating Systems
Total Marks: 70

- Instructions:**
- 1) All questions are compulsory.
 - 2) Figures to the right indicate full marks.
 - 3) Indicate clearly, the options you attempt along with its respective question number.
 - 4) Use the last page of main supplementary for rough work.

Section – I

Marks

- Q.1 (A)** Define Operating System. List different types of Operating System. Explain any one in detail. **5**
- Q.1 (B)** Explain free space management. **5**
- Q.1 (C)** What is a process? What are the different states of a process? Explain using diagrams. **5**
- OR**
- Q.1 (C)** Explain the concept of demand paging in memory management. **5**
- Q.2 (A)** What is Process Control Block (PCB)? **5**
- Q.2 (B)** Explain any two memory allocation algorithms. **5**
- OR**
- Q.2 (A)** Define the following CPU scheduling criteria: (i) CPU Utilization (ii) Throughput (iii) Turnaround Time (iv) Waiting Time (v) Response Time **5**
- Q.2 (B)** Explain any two page replacement algorithms. **5**
- Q.3 (A)** Write a short note on Monitors. **5**
- Q.3 (B)** What is Dining Philosophers problem? Explain in Detail. **5**
- OR**
- Q.3 (A)** Write a short note on (i) Critical Section, (ii) Race Conditions **5**
- Q.3 (B)** What is Deadlock? Explain four necessary conditions for deadlock to occur. **5**

PTO

Section – II

- Q.4 (A) What is fragmentation? Explain the difference between internal and external fragmentation. 5
- Q.4 (B) What are the different types of system calls? 5
- Q.4 (C) What is Paging? Give advantages and disadvantages. 5

OR

- Q.4 (C) Differentiate between shared memory & message passing. 5
- Q.5 (A) Discuss in detail Device Drivers. 5
- Q.5 (B) What is Semaphore? Explain solution to Consumer-Producer problem using Semaphore. 5

OR

- Q.5 (A) What is Interrupt? How is it handled by OS? 5
- Q.5 (B) Explain the Readers & Writers problem and solve it using semaphore. 5
- Q.6 (A) Explain the goals of Operating System Security. 5
- Q.6 (B) Explain the following UNIX Commands 5
(i) grep (ii) pwd (iii) mkdir (iv) man (v) who

OR

- Q.6 (A) Explain Domain Protection mechanism in brief. 5
- Q.6 (B) Explain Role & Function Of Kernel. 5

----- BEST OF LUCK -----