



5th Semester B.E. Degree Examination, Dec.2024/Jan.2025

### Operating System

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

#### Module-1

- 1 a. Explain the goals and key concerns of an operating system. (12 Marks)  
b. Explain the strategies for resource allocation. (08 Marks)

OR

- 2 a. Explain the key features of different classes of an Operating system. (10 Marks)  
b. Explain Round – robin scheduling with Time slicing algorithm. (10 Marks)

#### Module-2

- 3 a. Define Process. Explain state transition for a process with a neat diagram. (10 Marks)  
b. For the following set of process perform FCFS and SRN scheduling. Calculate mean turn around time and mean weighted turn around. (10 Marks)

Process	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>	P <sub>5</sub>
Admission time	0	2	3	5	9
Service time	3	3	2	5	3

OR

- 4 a. Explain Kernel and User level threads. (10 Marks)  
b. For the following set of process perform RR and LCN scheduling. Calculate mean turn around time and mean weighted turn around. (10 Marks)

Process	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>	P <sub>5</sub>
Admission time	0	2	3	5	9
Service time	3	3	2	5	3

#### Module-3

- 5 a. Compare the contiguous and non – contiguous memory allocation. (08 Marks)  
b. Explain Paging and Segmentation. (12 Marks)

OR

- 6 a. Explain Demand loading of pages along with flow chart. (12 Marks)  
b. For the following page referenced and reference time strings for a process. Find the number of page faults with alloci = 4 using i) FIFO ii) LRU page replacement policies. (08 Marks)

Page reference string	7	6	5	4	3	6	5	7	6	5	4	3	7
Reference time string	t <sub>1</sub>	t <sub>2</sub>	t <sub>3</sub>	t <sub>4</sub>	t <sub>5</sub>	t <sub>6</sub>	t <sub>7</sub>	t <sub>8</sub>	t <sub>9</sub>	t <sub>10</sub>	t <sub>11</sub>	t <sub>12</sub>	t <sub>13</sub>

#### Module-4

- 7 a. Explain File operations performed by processes. (07 Marks)  
b. List the fields in the File Control Block (FCB). (04 Marks)  
c. Explain the working of File system action at file operation and close. (09 Marks)

OR

- 8 a. Explain the allocation of disk space. (12 Marks)  
b. Explain Index sequential file organization. (08 Marks)

#### Module-5

- 9 a. Explain : i) Direct and Indirect naming ii) Blocking and Non – blocking sends. (08 Marks)  
b. Explain Buffering of inter process messages. (06 Marks)  
c. Explain Mail box and its advantages. (06 Marks)

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OR

- 10 a. Define Dead lock. Explain the conditions for resource dead lock. (05 Marks)  
b. Explain Dead lock handling approaches. (07 Marks)  
c. Explain Dead lock detection algorithm. (08 Marks)

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