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मन - 032

## Operating Systems (1080)

P. Pages : 3

Time : Three Hours

Max. Marks : 100

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answersheet should be written with blue ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Attempt **any two** questions from each unit.
5. Figures to the right indicate full marks.
6. Draw suitable diagram wherever necessary.
7. Assume suitable data wherever necessary.

### UNIT - I

- |    |    |     |  |   |
|----|----|-----|--|---|
| 1. | a) | i)  | Discuss evolution of O.S in brief.   | 5 |
|    |    | ii) | What is process ? Which transitions are not possible in process state transition diagram ? | 5 |
|    | b) | i)  | Explain following system calls for process management.                                     | 5 |
|    |    | i)  | DISPATCH A PROCESS   |   |
|    |    | ii) | ABORT.   |   |
|    |    | ii) | Discuss SPOOLING with its need.  | 5 |
|    | c) | i)  | Discuss any four services of O.S.  | 5 |
|    |    | ii) | Explain Kernel based O.S. in brief.  | 5 |

## UNIT - II

2. a) Consider following jobs to be executing on a uniprocessor system : 10

Job	A.T.	B.T.	Priority
P <sub>1</sub>	0	10	3
P <sub>2</sub>	1	12	2
P <sub>3</sub>	2	5	1
P <sub>4</sub>	2	6	4
P <sub>5</sub>	5	3	5

Draw Gantt chart & calculate average turn around time & waiting using following algorithm.

- i) Non preemptive SJF.
  - ii) Preemptive SJF.
  - iii) Non preemptive - priority based scheduling.
  - iv) Preemptive - priority.
- b) Assume lower the number ; higher its priority.
- i) Discuss types of schedulars. 5
  - ii) What is semaphore ? Explain principle operations of semaphore. 5
- c) i) Write a short note on producer - consumer problem. 5
- ii) Explain multilevel queue scheduling (MLQ) with feedback. 5

## UNIT - III

3. a) i) Define deadlock ? Also discuss resource preemption in context of recovery from deadlock. 5
- ii) Draw process state transition diagram in Unix. 5
- b) i) Explain following system calls in Unix. 5
- i) Exec ( )
  - ii) Fork ( ).
- ii) Discuss paging as a method of non contiguous memory allocation. 5

- c) Consider following snapshot of a system.

Job	Allocation			Maximum			Available		
	A	B	C	A	B	C	A	B	C
P0	0	1	0	7	5	3	3	3	2
P1	2	0	0	3	2	2			
P2	3	0	2	9	0	2			
P3	2	1	1	2	2	2			
P4	0	0	2	4	3	3			

- i) What are the contents of 'Need' matrix. 2
- ii) Is the system in safe state ? If yes, write the sequence. 8

#### UNIT - IV

4. a) What is page fault ? Draw & explain procedure to handle page fault ? 10
- b) i) Discuss goals of security & protection. 5
- ii) Write a short note on file access methods. 5
- c) i) Discuss thrashing in brief. 5
- ii) Explain working of demand paging technique in context of virtual memory. 5

#### UNIT - V

5. a) i) What is pipe ? Explain its types. 5
- ii) Write a short note superblock. 5
- b) i) Discuss in brief C-Look disk scheduling. 5
- ii) Write a note on swap - space management. 5
- c) What is distributed O.S ? Discuss design issues of it ? Also list design models of distributed O.S. 10

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