

Total No. of Questions : 8]

SEAT No. :

PE-2597

[Total No. of Pages : 3

[6583]-128

T.E. (Information Technology)

OPERATING SYSTEM

(2019 Pattern) (Semester - V) (314442)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates :

- 1) Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right side indicate full marks.
- 4) Assume suitable data, if necessary.

- Q1) a) What is critical section? Write parameters to control access to critical section and explain the requirements to be satisfied for its solution. [9]
- b) What is deadlock? What are the necessary conditions for deadlock? How deadlock is detected in a system having single instance of each type?[9]

OR

- Q2) a) Explain any two approaches for Recovery from deadlock. [6]
- b) Write bankers safety algorithm. [12]

Consider the following system snapshot

Process	MAX				Allocation				Available			
	A	B	C	D	A	B	C	D	A	B	C	D
P0	0	3	2	2	0	2	1	2	2	5	3	2
P1	2	7	5	2	1	1	0	2				
P2	2	3	7	6	2	2	5	4				
P3	1	6	4	2	0	3	1	2				
P4	3	6	5	8	2	4	1	4				

Answer the following questions

- i) What is the content of need matrix?
- ii) Is the system in a safe state?
- iii) If the request from process p1 arrives for (0,2,2,0), can it be granted immediately?

P.T.O.

- Q3) a)** Given references to the following pages by a program [9]
0,1,4,2,0,2,6,5,1,2,3,2,1,2,6,2,1,3,6,2.

Compute number of page faults if the system has 3 page frames for the following policies

- i) FIFO
 - ii) LRU
 - iii) Optimal Page replacement
- b) Explain paged memory management in detail. [8]

OR

- Q4) a)** What is Belady's anomaly? Explain with suitable example. [6]
b) Consider the following segment table : [5]

Segment	Base	Length
0	330	124
1	876	211
2	111	99
3	498	302

What are the physical addresses for the following logical addresses? If the address generates a segment fault indicate so.

- i) 0,99
 - ii) 2,78
 - iii) 1,265
 - iv) 3,222
 - v) 0,111
- c) Explain memory partition selection algorithms [6]

- Q5) a)** A disk drive has 1000 cylinders, numbered 0-999. The drive is currently serving the request at track no. 345 and head is moving towards track 0. The queue of pending requests in FIFO order is 123,874, 692,475,105,376. Starting from the current head position what is the total distance that disk arm moves to satisfy all the pending requests for the following disk scheduling algorithms. [12]

- i) FCFS
 - ii) SCAN
 - iii) LOOK
 - iv) SSTF
- b) Explain Record blocking with the help of neat diagrams. [6]

OR

- Q6) a)** Write different file system free space management techniques. [9]
b) Explain different file allocation methods. [9]

- Q7) a)** Define the following terms : [3]
- i) Macro processor
 - ii) Interpreter
 - iii) Linker
- b) Differentiate between a system software and application software. [6]
- c) Explain Pass 1 of assembler with flowchart. [8]

OR

- Q8) a)** Explain the phase structure of a compiler with neat diagram. [9]
- b) Explain the following [8]
- i) Compile and Go Loader
 - ii) Absolute Loader

