Total No. of Questions : 8]

SEAT No. :

PC1802

[Total No. of Pages : 2

[6353]-121

T.E. (Information Technology)

OPERATING SYSTEMS

FMG - 6 : Financial Mathematics

(2019 Pattern) (Semester - I) (314442)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Attempt Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8.***
2) ***Assume Suitable data jf necessary.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right side indicate full marks.***

Q1) a) State the dining philosopher problem. Provide solution by using semaphores and discuss how the critical section requirements are fulfilled? **[9]**

b) Describe methods for deadlock recovery. **[8]**

OR

Q2) a) Consider the following snapshot of the system **[10]**

	Allocation	Max	Available
	R_1 R_2 R_3	R_1 R_2 R_3	R_1 R_2 R_3
P_1	0 1 0	7 5 3	2 3 0
P_2	3 0 2	3 2 2	
P_3	3 0 2	9 0 2	
P_4	2 1 1	2 2 2	
P_5	0 0 2	4 3 3	

Answer the following questions using Banker's Algorithm

i) What are the values of need matrix?

ii) Is the system in the safe mode? If yes, what is the safe sequence?

iii) Request for process P1-> 2 0 1, determine whether the request can be granted safely or not? if yes then write safe sequence.

b) Define Mutual Exclusion. List the requirements of mutual exclusion.**[7]**

P.T.O.

Q3) a) For the following reference string. **[12]**

1, 2, 3, 4, 5, 3, 4, 1, 6, 7, 8, 7, 8, 9, 5, 4, 2, 4, 9

Count the number of page faults that occur with 3 frames using FIFO, Optimal and LRU page replacement methods. Discuss the result.

b) Write short note on virtual memory management. **[6]**

OR

Q4) a) Describe dynamic partitioning memory allocation strategies with example **[10]**

b) Elaborate the concept of demand paging with appropriate diagram **[8]**

Q5) a) A disk drive has 200 cylinders, numbered 0-199. The drive is currently serving the request at cylinder 53. The queue of pending requests in FIFO order is 98,183, 37, 122, 14, 124, 65, 67. Starting from the current head position, what is the total distance that the disk arms moves to satisfy all the pending requests for the following disk scheduling algorithms. Assume head is moving towards end of disk for C-SCAN and LOOK. **[12]**

i) FCFS
ii) C-SCAN
iii) LOOK
iv) SSTF

b) State and explain different I/O buffering techniques. **[6]**

OR

Q6) a) Explain different file allocation techniques. **[8]**

b) Write a short note on disk free space management. **[6]**

c) Describe File sharing. **[4]**

Q7) a) Draw a general model of compiler and explain all phases in detail. **[9]**

b) What are the types of loaders? Discuss four different functions of loaders. **[8]**

OR

Q8) a) Define Lexeme, Token and Pattern. **[6]**

b) Discuss forward reference problem with example. **[5]**

c) Explain the 'Compile and Go' Loader scheme with advantages and disadvantages using a suitable diagram. **[6]**