Total No. of Questions : 8]

SEAT No. :

P483

[Total No. of Pages : 2

[6003]-702

T.E. (Information Technology)
OPERATING SYSTEMS
(2019 Pattern) (Semester-I) (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 neccessary.***

Q1) a) What conditions are generally associated with readers-writers problem? Write its pseudo code. **[9]**

b) Describe resource allocation graph in detail. **[9]**

OR

Q2) a) Enlist different IPC techniques. Differentiate between named pipe and unnamed pipe with suitable example. **[9]**

b) What is Critical Section Problem? Give semaphore solution for producer-consumer problem. **[9]**

Q3) a) Consider six memory partitions of size 100 KB, 300 KB, 50 KB, 200 KB,150 KB and 200 KB. These partitions need to be allocated to processes of sizes 200 KB, 100 KB, 50 KB in that order. Perform the allocation of processes using dynamic partitioning algorithms given below and comment on internal and external fragmentation- **[12]**

i) First Fit Algorithm

ii) Best Fit Algorithm

iii) Worst Fit Algorithm

b) Explain Buddy system memory allocation with suitable example. **[5]**

OR

P.T.O.

Q4) a) Find the number of page faults for the reference string 6,5,1,2,5,3,5,4,2,3,6,3,2,1,2 using FIFO, LRU and optimal page replacement strategies. Consider frame size as 3. **[12]**

b) Explain Belady's anomaly with suitable example. **[5]**

Q5) a) Assume a disk with 200 tracks and the disk request queue has random requests in it as follows: 55,58,39,18,90,160,150,38,184. Find the no of tracks traversed and average seek length if

1) SSTF

2) SCAN

3) C-SCAN

Is used and initially head is at track no 100. **[12]**

b) What are typical operations that may be performed on a directory? **[6]**

OR

Q6) a) What is I/O buffering? Why I/O buffering is needed? State and explain different approaches of I/O buffering. **[9]**

b) Explain with example any three disk scheduling criteria. **[9]**

Q7) a) List down the phases of a compiler. Explain with suitable example. **[9]**

b) Explain macro call and macro expansion with suitable example. **[8]**

OR

Q8) a) Explain with example imperative statement, declarative statement, and assembly directive of assembly language programming? **[9]**

b) What is system software explain any four system software in brief? **[8]**

● ● ●