

Total No. of Questions : 8]

SEAT No. :

**PB3859**

**[6262]-122**

[Total No. of Pages : 2

**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 indicate full marks.
- 4) Assume Suitable data if necessary.

**Q1) a)** Explain the following with example **[9]**

- i) Mutual Exclusion
- ii) Synchronization
- iii) Race condition

b) What is Critical Section problem? Explain readers- writers problem. **[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)** What is page Fault? For the given reference string with 3- page frame available, determine the number of page faults for FIFO and LRU algorithms: 3,5,7,2,1,5,4,6,7,4,1,2. **[9]**

b) Explain Demand paging with the help of neat diagram. **[8]**

OR

**Q4) a)** Explain Buddy System with the help of neat diagram and example. **[9]**

b) What is segmentation? How address Translation is performed in segmentation system? **[8]**

**P.T.O.**

- 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. [12]

Find the no of tracks traversed and average seek length if

- i) SSTF
  - ii) SCAN
  - iii) C-SCAN is used and initially head is at track no 100.
- 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)** What is Loader? What are the basic functions of loaders? [10]
- b) What is system software? Explain any four system software in brief? [7]

