

**BACHELOR OF COMPUTER APPLICATIONS (CBCS - 2018 COURSE)**

**B.C.A. Sem-III : : SUMMER - 2022**

**SUBJECT : OPERATING SYSTEMS**

Day : Tuesday  
Date : 24-05-2022

**S-18767-2022**

Time : 02:00 PM-05:00 PM  
Max. Marks : 60

**N.B.**

- 1) **Q. No. 4 is COMPULSORY.**
- 2) Answer any **TWO** questions from Q. No. 1, 2, 3 in Section – I.
- 3) Answer any **TWO** questions from Q. No. 5, 6, 7 in Section – II.
- 4) Figures to the right indicate **FULL** marks.
- 5) Answers to both the sections should be written in **SAME** answer book.
- 6) Draw neat labeled diagram **WHEREVER** necessary.

**SECTION - I**

- Q.1** Differentiate between:
- a) Shortest job first and shortest remaining time next (06)
  - b) Multitasking and Multiprogramming. (06)
- Q.2**
- a) Explain any two types of Operating system structures with their merits and demerits. (06)
  - b) What is scheduler? How many types of schedulers exist in an Operating Systems? Explain. (06)
- Q.3**
- a) What is a page table? Define the structure of a page table. (06)
  - b) Explain the need and working of Direct Memory Access. (06)
- Q.4** Write short notes on any **THREE** of the following: (12)
- a) Device drivers
  - b) Directories
  - c) Working set model
  - d) Second chance page replacement algorithm
  - e) Swapping

**SECTION - II**

- Q.5** Consider following case: (12)

Processes	In time (am)	Burst time (min)
P1	10.00	7
P2	10.03	2
P3	10.05	3
P4	10.06	1

Calculate average turnaround time and average waiting time in case of:

- a) SJF                      b) SRTN

- Q.6** Suppose the head of moving hard disk with 200 tracks, numbered 0 to 199, is currently serving a request at track 143 and moving outside. If the queue of requests is kept in the FIFO order. (12)

86, 147, 91, 177, 94, 150, 100, 175, 130, 35, 140

Calculate total time required to move all these tracks using following disk scheduling algorithms. Consider Seek time – 0.4 sec.

- i) FCFS                      ii) SSTF

- Q.7** What are semaphores? Explain the producer – consumer problem and give the solution to this problem using semaphore. (12)

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