

Total number of printed pages-4

44 (4) BCA 4.1

2023

OPERATING SYSTEM

Paper : BCA 4.1

Full Marks : 80

Time : Three hours

The figures in the margin indicate full marks for the questions.

SECTION-A

(Compulsory)

1. (a) Fill in the blanks : 1×5=5
- (i) The two main objective of operating systems are _____ and _____.
 - (ii) Context switching is performed in two steps, which are _____ and _____.
 - (iii) Process execution comprises alternate cycles of _____ and _____.

Contd.

(iv) The main layers in operating system include _____, kernel and _____.

(v) The round robin scheduling is efficient for _____.

(b) State True **or** False : $1 \times 5 = 5$

(i) FCFS is well-suited for batch systems but not suitable for time sharing.

(ii) A programmer can define his own synchronization mechanism.

(iii) A deadlock can occur on a single system only.

(iv) Only processes are represented in a wait for graph.

(v) A programmer can define his own synchronization mechanism.

(c) Define the following terms : $2 \times 5 = 10$

(i) Race condition

(ii) Busy waiting

(iii) Semaphore

(iv) Deadlock

(v) Address binding

SECTION-B

Answer **any four** questions.

2. (a) Answer **any five** : $2 \times 5 = 10$
- (i) What is monitor ?
 - (ii) What is the function of dispatcher ?
 - (iii) What should be the ideal size of time quantum ?
 - (iv) Define safe and unsafe state.
 - (v) What is page fault ?
 - (vi) What are the major functions of operating system ?
- (b) Describe the function of each layer in I/O software. 5
3. (a) Differentiate between the following : $2\frac{1}{2} \times 2 = 5$
- (i) Physical address and logical address.
 - (ii) Internal and external fragmentation.
- (b) Distinguish between preemptive and non-preemptive scheduling algorithm. 5

- (c) Explain the need for storing data on secondary storage devices. 5
4. (a) What do you mean by file system mounting ? How it is performed ? 5
- (b) Define the following terms : 1×5=5
- (i) Throughput
 - (ii) Turnaround time
 - (iii) Waiting time
 - (iv) Response time
 - (v) Time quantum
- (c) Describe scheduling in soft real time system. 5
5. Write short notes on : **(any three)** 5×3=15
- (i) FCFS
 - (ii) Process control block
 - (iii) Dining philosophers problem
 - (iv) Methods for handling deadlocks
6. (a) Explain the Banker's Algorithm for multiple resources with example. 10
- (b) Explain the concept of virtual memory. Define page fault. 5