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 _____.

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

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

(b) State True **or** False : 1×5=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 : 2×5=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*** : 2×5=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 : 2½×2=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
