A–1138

Total Pages : 4 **Roll No. .....**

BCA(N)-102

Operating System

Examination, June 2025

Time : 2:00 Hrs. Max. Marks : 70

Note* :–** This paper is of Seventy (70) marks divided into two (02) Sections 'A' and 'B'. Attempt the questions contained in these sections according to the detailed instructions given therein. ***Candidates should limit their answers to the questions on the given answer sheet. No additional (B) answer sheet will be issued.

Section–A

Long Answer Type Questions 2×19=38

***Note* :–** Section 'A' contains Five (05) Long-answer type questions of Nineteen (19) marks each. Learners are required to answer any *two* (02) questions only.

1. Explain the concept of memory management in an OS. What are the different types of memory management techniques ?

2. Distinguish between the following term :

   (a) Process and Program

   (b) Parallel *Vs*. Distributed computing

   (c) Job scheduling and CPU scheduling

3. Define the term deadlock. Explain various necessary conditions for a deadlock to occur. Explain in brief about deadlock prevention.

4. Answer the following :

   (a) Define parallel computing

   (b) What is the role of the file system in the Linux kernel ?

5. Answer the following :

   (a) What is a shell in UNIX ? Differentiate between the types of shells in UNIX ?

   (b) Why is disk scheduling important in operating systems ?

Section–B

Short Answer Type Questions 4×8=32

***Note* :–** Section 'B' contains Eight (08) Short-answer type questions of Eight (08) marks each. Learners are required to answer any *four* (04) questions only.

1. What is the difference between a process and a thread in terms of memory and execution ?

2. Define in detail about the following term :

   (i) Real time operating system

   (ii) Batch operating system

3. Explain the concept of virtual memory. How does paging help in the implementation of virtual memory ?

4. What is the role of I/O management in an operating system ? Discuss the types of I/O devices and their management.

5. Explain in detail the following CPU scheduling algorithms:

   (a) FCFS

   (b) Round Robin

6. Explain the concept of Inter-Process Communication (IPC) and its importance.

7. What are firewalls, and how do they help in securing a network and operating system ?

8. Explain the concept of semaphores in the context of Synchronization.

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