

**A-0847**

**Total Pages : 4**

**Roll No. -----**

**BCA-10**

**Operating System**

**Bachelor of Computer Application (BCA)**

**3<sup>rd</sup> Semester Examination 2024(Dec.)**

**Time: 2:00 hrs**

**Max. Marks: 70**

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

**P.T.O.**

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## Section-A (Long-Answer-Type Questions)

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.

[2x19=38]

Q.1. Write the short note on the following:

- a. Batch System
- b. Multi-programmed system
- c. Cryptography
- d. DMA
- e. Virtual Memory
- f. Race condition

Q.2. Define Process? Explain process State diagram? Consider 3 processes P1, P2 and P3, which require 5, 7 and 4 time units and arrive at time 0, 1 and 3. Draw the Gant chart, process completion sequence and average waiting time for.

- i. Round robin scheduling with CPU quantum of 2 time units.
- ii. FCFS

- Q.3. What is synchronization? What are the different synchronization mechanisms? Explain in detail.
- Q.4. Give page reference string: 1, 2, 3, 2, 1, 5, 2, 1, 6, 2, 5, 6, 3, 1, 3, 6, 1, 2, 4, 3. Compare the number of page faults for LRU, FIFO and Optimal page replacement algorithm.
- Q.5. What is deadlock? What are the methods for handling deadlock?

### **Section-B (Short-Answer-Type Questions)**

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.

[4x8=32]

- Q.1. Define Operating System and explain the various types of Operating Systems?
- Q.2. Explain Dead lock Detection (Banker's Algorithm) with Example?
- P.T.O.

- Q.3. Discuss about page replacement algorithms with example.
- Q.4. Explain the concept of file with Example. What are File Attributes?
- Q.5. Explain following allocation algorithm.
- a. First fit
  - b. Best fit
  - c. Worst fit
  - d. Next fit
- Q.6. Explain the concept of interprocess communication and race condition.
- Q.7. Explain the concept of Authentication, Protection and Access control in operating system.
- Q.8. Why mutual exclusion required? Explain any 2 methods of achieving mutual exclusion in detail.

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