LNCT UNIVERSITY, BHOPAL

Enrollment No. ...

CS-302
B.TECH (CS / AIML) III SEMESTER
EXAMINATION [DECEMBER-2024]
OPERATING SYSTEM

Maximum Marks: 70　　　　　　Time Allowed: 3Hours

Note:- Attempt all questions. Internal choice is given.

(SECTION –A)

1. Short Answer Type Questions (Attempt Any Five) [5x6=30]

   i. Define an operating system and explain its primary functions.

   ii. What is a Process Control Block (PCB)? List its components.

   iii. Differentiate between layered and microkernel operating systems.

   iv. Explain the concept of semaphores and their use in process synchronization.

   v. What is external fragmentation in memory allocation? How can it be reduced?

   vi. Define round robin scheduling algorithm with example.

   vii. What is the role of free-space management in file systems?

(SECTION –B)

2. Long Answer Type Questions (Attempt Any Four) [4x10=40]

   i. Describe the various types of operating systems and their key features.

   ii. Describe the wait-for graph (WFG) method for deadlock detection with an example.

   iii. Explain the concept of paging, including page allocation and hardware support.

   iv. Compare and contrast the different disk scheduling algorithms with examples.

   v. Explain the principles of security in operating systems and describe role-based access control (RBAC).

   vi. Compare the features and architecture of UNIX/Linux and Windows operating systems.