Graphic Era
HILL UNIVERSITY
Established by an Act of the State Legislature of Uttarakhand (Adhiniyam Sankhya 12 of 2011)
University under section 2(f) of UGC Act, 1956

Mid Term (Odd) Semester Examination October 2024

Roll no.....

Name of the Course and semester: MCA-1ST
Name of the Paper: ADVANCE OPERATING SYSTEM
Paper Code: TMC 104
Time: 1.5-hour

Maximum Marks: 50

Note:

(i) Answer all the questions by choosing any one of the sub questions
(ii) Each question carries 10 marks.

Q1. (10 Marks)

a. Define an operating system and provide an explanation of the layered architecture of an operating system. (CO1)

OR

b. Write a short note on following:
(i) directory and Sub directory (ii) Boot block, (iii) Inode block (iv) Super block (v) Group descriptor. (CO1)

Q2. (10 Marks)

a. Explain the various file systems used in different operating systems. Compare and contrast sequential, direct, and indexed file organization methods. (CO1)

OR

b. Explain the access permissions available in LINUX. What do you understand by access matrix (CO1)

Q3. (10 Marks)

a. Differentiate between following (i) System Calls Vs Functions, (ii) Windows Vs Linux (CO1)

OR

b. Explain the different types of attributes and operations related to file. (CO1)

Q4. (10 Marks)

a. Explain the different types of real time operating system. Also explain the different characteristics of RTOS (CO2)

OR

b. Consider a real-time system with three tasks, each with its execution time (C), period (T). The tasks are scheduled using the rate monotonic scheduling algorithm.
Task A: C = 2 ms, T = 8 ms
Task B: C = 3 ms, T = 6 ms
Task C: C = 1 ms, T = 12 ms
Check whether the task can be scheduled or not (CO2)

Q5. (10 Marks)

a. A disk has 200 cylinders, numbered from 0 to 199. The disk arm is currently at cylinder 100. The queue of pending disk requests contains the following cylinder numbers: 37, 83, 27, 122, 18, 124 Calculate the total head movement using the First come first serve (FCFS) and Shortest Seek Time First (SSTF) disk scheduling algorithm. (CO2)

OR

b. Write a short note on (i) Data Protection and security goals of operating system,
(ii) Access permissions of files and directories. (CO2)