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Code No: 125EN

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year I Semester Examinations, January - 2025

COMPUTER ORGANIZATION AND OPERATING SYSTEMS

(Electronics and Communication Engineering)

Time: 3 hours **Max. Marks: 75**

Note: i) Question paper consists of Part A, Part B.
ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.
iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART - A

(25 Marks)

1.a)	Define Multiprocessor Systems and provide an example.	[2]
b)	Explain Fixed Point Representation in computers with an example.	[3]
c)	What is Microprogramming and how does it simplify the control unit design?	[2]
d)	What is the Page Table and what role does it play in Paging?	[3]
e)	Explain the purpose of Stack Organization in computer systems.	[2]
f)	What is the difference between Hard-Wired Control and Microprogrammed Control?	[3]
g)	What are Memory-Reference Instructions? Provide an example.	[2]
h)	Describe the concept of Virtual Memory and its significance.	[3]
i)	What is File Allocation? Explain the Contiguous Allocation method.	[2]
j)	What are the basic File System Operations in an operating system?	[3]

PART - B

(50 Marks)

2.a) Explain the Arithmetic Logic Unit (ALU) and its role in computer operations.
b) Discuss the Instruction Cycle and describe its major stages. [5+5]

OR

3.a) What are the Bus Structures in a computer system? Explain the function of each bus in data transfer.
b) Discuss the difference between Fixed-Point Representation and Floating-Point Representation. Provide examples. [5+5]

4.a) Describe the working of Microprogrammed Control. How does it differ from Hard-Wired Control?
b) Discuss the role of Control Memory in a microprogrammed control unit. [5+5]

OR

5.a) What is Cache Memory? Explain the different types of cache (L1, L2, L3) and their advantages.
b) Explain the concept of Semiconductor RAM. [5+5]

6.a) Define the functionality of RS232 protocol.
b) Explain the concept of Priority Interrupts and their role in I/O systems. [5+5]

OR

7.a) Discuss the different Asynchronous Data Transfer modes, such as Handshake and Interrupt.
b) Describe the structure and working of a Peripheral I/O Interface. [5+5]

8.a) Define Segmentation and discuss its advantages over Paging.
b) Explain the concept of Swapping in memory management. Discuss the advantages and disadvantages of this approach. [5+5]

OR

9.a) Discuss the Deadlock Prevention strategies in operating systems.
b) Explain the concept of Thrashing and how it affects system performance. [5+5]

10.a) Briefly explain various file allocation strategies.
b) Explain the Directory Structure in file systems. What are the advantages of using hierarchical directory structures? [5+5]

OR

11.a) What is File Sharing? Discuss the issues involved in File Sharing within a multi-user system.
b) Explain the different methods of File Allocation (Contiguous, Linked, Indexed) and their advantages and disadvantages. [5+5]

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