R13

Code No: 115EN

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, March - 2024
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 Digital computer.	[2]
b)	What do you mean by an Interrupt?	[3]
c)	What is a Bus?	[2]
d)	Distinguish between EPROM and EEPROM.	[3]
e)	What do you mean by Synchronous Bus?	[2]
f)	Define priority interrupt.	[3]
g)	Define process Context switching.	[2]
h)	What is meant by Trashing?	[3]
i)	Define File and list out various file attributes.	[2]
j)	Compare sequential and random file access methods.	[3]

PART - B
(50 Marks)

2.a) Outline the different types of Buses used in computers. Discuss their uses.
b) Describe about Memory Reference Instructions in detail. [5+5]

OR

3.a) Distinguish between Multiprocessors and Multi computers.
b) Explain the Booth's algorithm for multiplication of signed two's complement numbers. [5+5]

4. Discuss the different mapping techniques used in Cache memories and their relative merits and demerits. [10]

OR

5. Describe the control unit organization with a separate Encoder and Decoder functions in a hardwired control. [10]

6.a) Write and explain the characteristics and addressing issues of USB device.
b) Explain the Direct Memory Access. How it improves the performance of the system? [5+5]

OR

7.a) How to handle simultaneous interrupts using daisy chaining and priority? Explain in detail.
b) Write detailed note on RS232 and IEEE1394 Standard Serial Communication Protocols. [5+5]

8. Consider the following snapshot of a system with 5 processes and 4 resources.

Process	Allocation				Max				Available			
	R1	R2	R3	R4	R1	R2	R3	R4	R1	R2	R3	R4
P0	0	0	1	2	0	0	1	2	1	5	2	0
P1	1	0	0	0	1	7	5	0				
P2	1	3	5	4	2	3	5	6				
P3	0	6	3	2	0	6	5	2				
P4	0	0	1	4	0	6	5	6				

Answer the following questions using the banker's algorithm:
a) Compute the need matrix.
b) Is the system in a safe state?
c) If a request from process P1 arrives for <0,4,2,0>. Can the request be granted immediately? [10]

OR

9.a) Illustrate System call with an example of copying one file to another.
b) Consider the following reference string 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1. Find the number of page faults with FIFO, Optimal and LRU page replacement algorithms with three frames which are empty initially. Which algorithm gives the minimum number of page faults? [5+5]

10. Elaborate various file accessing methods in detail. [10]

OR

11. Explain about the linear list and hash table data structures to implement a directory.[10]

---ooOoo---