

R18

Code No: 155AP

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year I Semester Examinations, January/February - 2023

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) Recall the Types of Computers. [2]
- b) Summarize the Register Transfer Language. [3]
- c) What is Micro Programmed Control? [2]
- d) Outline the Memory system. [3]
- e) What are Peripheral Components in I/O? [2]
- f) Explain the Input-Output Interface. [3]
- g) Recall the Computer Operating Systems Functions. [2]
- h) Outline the Structure of the Page Table. [3]
- i) Comment on file system protection. [2]
- j) Outline the File System Interface. [3]

PART – B

(50 Marks)

- 2.a) Demonstrate the Instruction Cycle with neat diagram.
- b) Identify the instruction formats along with suitable examples. [5+5]

OR

- 3.a) Make use of fixed-point representation to represent the number -47.259.
- b) Make use of floating-point representation to represent the number -5.837. [5+5]

- 4.a) Elaborate the design of Control Unit.
- b) Adapt the performance considerations in design of cache memories. [5+5]

OR

- 5.a) Elaborate the concepts by comparing and contrasting the Read only Memory (ROM) and Random Access Memory (RAM).

- b) Adapt the address sequencing in Microprogrammed control. [5+5]

- 6.a) Demonstrate the working of Interconnect (PCI) Bus.
- b) Illustrate the working of Input –Output Processor (IOP). [5+5]

OR

- 7.a) Identify Asynchronous Data Transfer Modes with examples.
- b) Make use of Serial Communication to I/O Organization. [5+5]

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8.a) State whether you agree or disagree with the following claim:

“The bankers algorithm may fail to avoid the deadlock if a resource breaks down.”
Justify your answer.

b) Consider the following page replacement algorithms. Rank these algorithms on a five point scale from “bad” to “perfect” according to their page fault rate. Distinguish those algorithms that suffer from belady’s anomaly from those that do not.

i) LRU ii) FIFO iii) optimal page replacement. [5+5]

OR

9. Given 3 processes A, B, C three resources x,y,z and following events,

a) A requests x b) A requests y c) B request y d) B requests z
e) C requests z f) C requests x g) C Request y

Assume that requested resources should always be allocated to the request process if it is available. Draw the resource allocation graph for the sequences. And also mention whether it is a deadlock? If it is, how to recover the deadlock. [10]

10.a) Explain various ways to implement directories.

b) Write a detail note on file system structure. [5+5]

OR

11.a) Demonstrate the concept of file sharing.

b) Describe the implementation of file system. [5+5]

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