

Third Semester B.E. Degree Examination, Dec.2019/Jan.2020

Computer Organization

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, $42+8 = 50$, will be treated as malpractice.

Module-1

- 1 a. With a neat block diagram discuss the basic operational concept of a computer. (08 Marks)
 b. What is performance measurement? Explain overall SPEC rating for computer. (06 Marks)
 c. Explain Big-Endian, Little-Endian and assignment byte addressability. (06 Marks)

OR

- 2 a. What is an addressing mode? Explain any three addressing modes with example. (08 Marks)
 b. Draw single bus structure, discuss about memory mapped I/O. (06 Marks)
 c. What is stack and queue? Write the line of code to implement the same. (06 Marks)

Module-2

- 3 a. Define bus arbitration. Briefly explain the two approaches of bus arbitration. (10 Marks)
 b. Explain the following with respect to USB: i) USB Architecture ii) USB Protocols. (10 Marks)

OR

- 4 a. With a neat block diagram, explain the general 8 bit parallel processing. (08 Marks)
 b. With a block diagram, explain how the keyboard interfaced to processor. (06 Marks)
 c. Explain PCI bus. (06 Marks)

Module-3

- 5 a. What is 'Locality of Reference'? Explain Direct mapping technique and set-associative mapping technique. (10 Marks)
 b. What is asynchronous DRAM? With a neat diagram explain the internal organization of a $2M \times 8$ dynamic memory chip. (10 Marks)

OR

- 6 a. What is virtual memory? With a diagram explain how virtual memory address translation take place. (10 Marks)
 b. Write a note on:
 i) Magnetic disk principles
 ii) Magnetic tape system. (10 Marks)

Module-4

- 7 a. Explain with a neat block diagram, 4-bit carry look ahead adder. (08 Marks)
 b. Perform following operations on the 5-bit signed numbers using 2's complement representation system. Also indicate whether overflow has occurred.
 i) $(-9) + (-7)$ ii) $(+7) - (-8)$. (04 Marks)
 c. Explain the concept of carry save addition for the multiplication operations, $M \times Q = P$ for 4-bit operands with diagram and suitable example. (08 Marks)

OR

- 8** a. With a neat diagram, explain IEEE standard for floating point numbers. (06 Marks)
 b. Perform multiplication for -13 and +09 using Booth's Algorithm. (06 Marks)
 c. With a neat block diagram, explain circuit arrangement for binary division. (08 Marks)

Module-5

- 9** a. What is pipelining? Explain the basic concept of pipeline performance with neat sketch. (08 Marks)
 b. Explain with neat diagram, micro-programmed control method for design of control unit and write the micro-routine for the instruction branch < 0 . (08 Marks)
 c. Differentiate between hardwired and micro programmed control unit. (04 Marks)

OR

- 10** a. Briefly explain the block diagram of camera. (10 Marks)
 b. With a neat diagram, explain the structure of general purpose multiprocessors. (10 Marks)

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