BE INFO TECH 2ⁿᵈ YEAR 1ˢᵗ SEMESTER SUPPLEMENTARY EXAMINATION, 2018

Computer Architecture

Time: 3 Hours

Full Marks: 100

Answer Any Five

1.a) Explain your understanding about the differences between Computer Architecture & Computer Organization.

b) With proper diagram, explain your understanding about Von Neumann Architecture.

c) Represent the decimal number 207 in 3 different binary number format.

d) Illustrate how a number can be represented as per IEEE 754 Double Precision Formats.

(2+6+6+6)

2. a) i) Explain 'Temporal Locality of Reference' and 'Spatial Locality of Reference'.
   ii) Differentiate between Memory Access Time and Memory Cycle Time.

b) Illustrate the differences between 'Big Endian' and 'Little Endian' byte ordering concept.

c) Do the feature comparison among various types of memory.

d) i) Differentiate between SIMM and DIMM module.
   ii) Differentiate between 'Cache Hit' and 'Cache Miss'

((2+2)+4+8+(2+2))

3.a) With respect to the Central Processing Unit(CPU), elaborate your understanding about ALU, CU and Registers.

b) List down the names of 6 different Registers inside the CPU.

c) Draw the internal diagram of a CPU (having Single Bus Organization) showing all the relevant components.

d) Elaborate your understanding about 'Microroutine' and 'Microinstruction'

((3x2)+3+7+4)

4.a) For a CPU which supports 'Zero-Address' instruction format, write down a set of assembly language instruction which will evaluate the expression X = (A+(B*W)) * (C+(D/Y)). All values are available in the memory; also the result has to be stored back in the memory.

b) With proper instruction example, illustrate your understanding about "Register Indirect Addressing" and "Direct Addressing" modes.

c) List down 4 different categories of Instruction types.

d) Illustrate the differences between 'Logical Shift' and "Arithmetic Shift' operations.

(4+(4x2)+4+4)

5.a) With proper examples and diagram, illustrate your understanding about "Program-controlled I/O", "Interrupt Driven I/O" and "I/O using DMA".

b) List down at least 4 different devices in a computer which may get performance benefit because of DMA mode of I/O transfer.

d) There are two types of I/O Interface- Parallel and Serial. Explain them.

((4x3)+4+4)

6.a) With respect to a Magnetic Disk, elaborate your understanding about 'Cylinder', 'Platters', 'Tracks', 'Sectors', 'Surface', 'Spindle' and 'Read/Write Heads'.

b) With proper examples, show how the storage capacity of a disk can be calculated.

((7x2)+6)

X------------