Printed Pages : 1 **Roll No.** | | | | | | | | | | | **NEC012**

B. TECH.

THEORY EXAMINATION (SEM–VI) 2016-17

COMPUTER ARCHITECTURE & ORGANIZATION

Time : 3 Hours ***Max. Marks : 100***

Note : *Be precise in your answer. In case of numerical problem assume data wherever not provided.*

SECTION-A

1. **Explain the following:** **(10×2=20)**

a) Memory
b) Flash Memory
c) IEEE
d) Design Methodology
e) Normalization and Biasing
f) Fixed point arithmetic
g) Microcode & Microinstruction
h) Horizontal and Vertical micro-instructions
i) Processor-Memory Communication.
j) PLDs

SECTION-B

2. Attempt any five of the following: **(10×5=50)**

a) What do you mean by pipelining? Explain instruction pipelining with the help of example.

b) What is Cache Memory? How is it implemented? A twoway set associated 'cache memory uses blocks of fourwords. The cache can accommodate a total of2048 wordsfrom main memory. The main memory size is l28K x32.

i) Formulate all pertinent information requiredto construct the cache memory.
ii) What is the size of cache memory?

c) What are Combinational Array Multipliers? Illustrate the Booth multiplication Algorithm.

d) Discuss about advantages and disadvantages of PLD's. Design a 4-bit register with parallel I/O and 4-bit register with parallel load.

e) Explain with block diagram of Error Detection and Correction Logic with suitable example.

f) What are high speed adders? Design a Carry Look ahead adder.

g) Draw a structure of an 8M X 8 bit DRAM chip. Explain its specifications.

h) Explain VHDL. What is device modeling? What is complier and simulator? Explain structural modeling with an example.

SECTION-C

Attempt any two of the following: **(15×2=30)**

3. Draw and explain typical micro programmed controller. What is program control unit? Design a state transition graph for the accumulator based CPU with an example.

4. Give the block diagram of micro program sequencer for a control memory and explain it properly. What do you understand by term Superscalar? Explain the concept of superscalar processing.

5. Explain how Booth's algorithm is suitable for signed number multiplication. Perform the multiplication of followingusing Booth algorithm - 4 X- 5. Explain the floating point multiplication with the help offlowchart.