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BIELE-015

B.Tech. – VIEP – ELECTRONICS AND COMMUNICATION ENGINEERING (BTECVI)

Term-End Examination

00716

June, 2015

BIELE-015 : COMPUTER ARCHITECTURE

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **seven** questions. All questions carry equal marks. Any missing data may be suitably assumed and mentioned.*

1. (a) List the various register level components. Draw the generic block representation of register level components. *5*

(b) Draw and explain in brief the internal structure of a CPU. *5*

2. (a) Discuss the different types of instructions in an instruction set of a computer. *5*

(b) What are the major attributes of RISC computers ? State its applications. *5*

3. (a) What is instruction code ? Discuss the different fields of instruction format. 5

(b) Obtain the appropriate decimal value that confirms IEEE 754 floating point format for the following two numbers : 5

(i) A = 10010111110000

(ii) B = 01000111000001

4. (a) Give an adder expansion design for a 16-bit adder which is composed of 4-bit adder and linked by ripple carry propagation. 5

(b) Give the flow chart for Booth's algorithm suitable for signed number multiplication. 5

5. (a) What is the need of multilevel memory system ? Briefly explain with some suitable examples. 5

(b) Discuss the Set Associative Mapping used in cache memory. 5

6. What do you mean by pipelining ? Explain the instruction pipelining with the help of an example. 10

7. (a) For two level memory hierarchy (M_1, M_2), explain the following : 5

(i) Cost and Performance

(ii) Hit-ratio and Miss-ratio

(iii) Average time of Access

(iv) Access-efficiency

(v) Space-utilization

(b) Describe the general structure of Content Addressable Memory (CAM). Why is it so expensive ? *5*

8. (a) Define interrupt. Explain the different types of interrupts. *5*

(b) Differentiate between isolated mapped I/O and memory mapped I/O. *5*

9. (a) What is meant by program parallelism ? Explain with a suitable example. *5*

(b) Give the block diagram of DMA controller and explain its working briefly. *5*

10. Write short notes on any ***two*** of the following : *2×5=10*

(a) Hardwired Control

(b) Virtual Memory

(c) Superscalar Processor