

(Following Paper ID and Roll No. to be filled in your Answer Books)

Paper ID : 110401

Roll No.

B.TECH.

Theory Examination (Semester-IV) 2015-16

COMPUTER ORGANISATION

Time : 3 Hours

Max. Marks : 100

Note: Attempt questions from all sections as per instructions.

Section-A

1. Attempt all parts. Each part carries 2 marks. (2×10=20)

- (a) Classify various registers in Computer Organization.
- (b) Why do we use RTL in Computer Organization?
- (c) Give the Block diagram that executes the statement, a.R: $X \leftarrow Y, Y \leftarrow X$.
- (d) Explain floating point representation for binary numbers.
- (e) When a floating point number is said to be normalized?
- (f) Draw a flow chart of Booth's Algorithm?

- (g) What are micro-operations? Write their names also.
- (h) Write the function of: (i) PC (ii) IR (iii) MAR (iv) MDR
- (i) Explain the organization of a processor?
- (j) Classify Instruction Formats based on their size of the Instruction.

Section-B

2. Attempt any Five parts. Each part carries 10 marks.

[10×5=50]

- (a) Explain the various addressing modes with diagram.
- (b) What do you mean by high-speed adder? Discuss design of higher speed adders.
- (c) Write the control sequence for performing addition function.
- (d) What is the difference between hardwired control and micro-programmed control unit? What are the advantages and disadvantages in each control?
- (e) Represent $(-307.1875)_{10}$ in single precision and double precision format.

- (f) Show the step by step multiplication process of $(15) * (-13)$ using Booth's Algorithm.
- (g) Discuss the advantages and disadvantages of Polling and daisy chaining bus arbitration schemes.
- (h) Explain memory hierarchy with diagram.

Section-C

Attempt any Two questions . Each question carries 15 marks.

(15×2=30)

- 3. A n bit computer has 16 bit address bus . the first 15 lines of the address are used to select a bank of 32k bytes of memory. The higher order bit of the address is used to select a register which receives the contents of the data bus. Explain, how this configuration can be used to extend the memory capacity of the system to eight banks of 32k bytes each , for a total of 256 bytes of memory.
- 4. Why DMA is required? Explain its functions with the help of block diagram.
- 5. Write a program to evaluate arithmetic expression
 $X = (A - B) * (((C - D * E) / F) G)$
 - (i) Using a general register computer with three address instructions.

- (ii) Using a general register computer with two address instructions.
- (iii) Using a general register computer with one address instructions.
- (iv) Using a general register computer with zero address instructions.

