Roll No. .....

Y–2103

B. C. A. (Part III) EXAMINATION, 2015

Paper Third

COMPUTER SYSTEM ARCHITECTURE

Time : Three Hours] [*Maximum Marks : 50*

Note : Answer any *two* parts from each question. All questions carry equal marks.

1. (a) Convert the following :

   (i) $(2\,F59)_{16} = (\ )_{10}$

   (ii) $(725.25)_8 = (\ )_2$

   (b) Perform the following binary arithmetic operations :

   (i) $(1000100)_2 - (1010100)_2$

   (ii) Divide $(11001)_2$ by $(101)_2$

   (c) What are error detection and correction codes ? Explain each one in brief.

2. (a) Simplify the Boolean expressions to a minimum number of literals :

   (i) $A\,B\,C + A\,\bar{B}\,C + AB$

   (ii) $\overline{(A+B)}\,(\bar{A}+\bar{B})$

(b) Draw a circuit of full adder and also discuss its working.

(c) Explain the working of J-K flip-flop.

3. (a) Define microprocessor. Explain the application of microprocessor.

(b) What are the special registers in a typical computer ?

(c) Explain common bus organization of basic computer with diagram.

4. (a) Describe the basic I/O operations of modern processors.

(b) Discuss the DMA driven data transfer technique.

(c) Explain the handshake control of data transfer during input and output operation.

5. (a) Explain semi-conductor memory cell.

(b) Describe the concept of virtual memory in detail.

(c) Explain associative mapping of cache memory.