Reg. No. : .....

D 1513

Q.P. Code : [07 DSCA 02/ 07 DSC 01/07 DIT 02]

(For the candidates admitted from 2007-2008 onwards)

B.C.A/B.Sc. DEGREE EXAMINATION, MAY 2014.

First Year

Part III – Computer Science/Computer Applications/Information Technology

DIGITAL FUNDAMENTALS AND ARCHITECTURE

Time : Three hours Maximum : 100 marks

Answer any FIVE questions.

(5 × 20 = 100)

1. (a) Implement using fundamental gates

$Q = A\,B + \overline{AB} + \overline{A}\,\overline{B}$.

(b) Prove by using Boolean theorems :

$\overline{A\overline{B} + \overline{A}B} = AB + \overline{A}\,\overline{B}$

(c) Draw the circuit of a Full subtractor and give its truth table.

2. (a) Convert the octal number into decimal and hexa decimal number systems 40.5.

(b) How will you convert a binary number into Gray code?

3. (a) Simplify using Karnaugh map and implement by using NOR gates only.

$Q(A,B,C,D) = \sum m(1,5,6,7,11,13,14)$.

(b) Draw the circuit of a JK flip flop and explain its working.

4. (a) Explain the 4 × 1 multiplexer with diagram. Using two such multiplexers, draw a 8 × 1 multiplexer.

(b) Explain the rotate instructions with examples.

5. (a) Explain the instructions formats with respect to 8085.

(b) Explain the addressing modes of 8085 with examples and specify the purpose of any two pins of 8085.

6. (a) Explain how priority is assigned to interrupts?

(b) Differentiate synchronous from asynchronous counters.

7. Discuss the Associative memory, with a memory cell diagram and the match logic.

8. (a) Perform the following :

1110 * 101 (in binary)

222 + 666 (in octal)

110 + 111 (in Hexa Decimal)

(b) Explain the use of XOR gate.