MAHATMA GANDHI UNIVERSITY

M.C.A DEGREE EXAMINATION

MODEL QUESTION PAPER

(2011 Revised Syllabi)

First Semester

MCA 102 DIGITAL SYSTEMS AND LOGIC DESIGN

Time : Three hours **Maximum : 75 Marks**

Part A

Answer any ten questions.

1 Perform following subtraction using 2's complement method.
(a) 01100-01001 (b) 0011.1001-0001.1110
2 Encode the following decimal numbers into excess 3 code.
(a) 327.89 (b) 20.305
3 Briefly describe the concept of hamming code.
4 Solve the following expressions using Boolean Algebraic theorem.
A' B C + A B' C + A B C' + A B C
5 Why NAND gate is called as universal gate? Establish the statement.
6 Develop the logic circuit for a Full Adder.
7 Explain the working of RS flip flops.
8 Brief notes on serial in parallel out registers.
9 Draw the diagram of a 3 bit counter using Flip Flops.
10 Compare impact and Non impact printer.
11 What is sector interleave ?
12 Write a short note on the working of scanner.

(10 x 3 = 30 marks)

Part B

***All questions carry equal marks*.**

(a) Explain various binary codes used in digital system with the help of examples.

Or

(b) Convert the decimal number258.763 to (1) binary (2) octal (3) hexadecimal.

13 (a) Explain any three logic gates with truth table and logic diagram.

Or

(b) Describe the minimization of Boolean function using K map method with suitable example.

14 (a) Explain the use of multiplexers and demultiplexers with logic diagram.

Or

(b)With the aid of truth table and logic diagram, explain the working of a Master slave flip flop.

15 (a) Draw the logic diagram and timing characteristics of bidirectional shift registers.

Or

(b) Draw the circuit and explain the working of an asynchronous decade Counter.

16 (a) Explain the different components of Hard disk.

Or

(b) Explain the working of a Dot matrix printer.

(5*9 = 45 marks)