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**B.C.A. Ist Semester (New)
Examination–December, 2013
Logical Organization of Computer-I
Paper-BCA-104**

Time : 3 hours

Max. Marks : 80

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard will be entertained after the examination.

Note : Student will be required to attempt **five** questions in all. Question No. 1 is **compulsory**. In addition to it, student will have to attempt **four** more questions selecting **one** question from each unit.

1. Explain the following: **16**

(i) Error detecting and correction codes

- (ii) Fixed point and floating point representation
- (iii) Venn Diagram
- (iv) Truth table
- (v) Multilevel NAND circuit
- (vi) Combinational Logic-Characteristics
- (vii) Full Adder
- (viii) Parallel Binary Adder

Unit-I

2. (i) What do you mean by Binary number system. Also explain the Binary Arithmetic in detail. 8
- (ii) What do you mean by Hamming Codes. Explain in detail. 8
3. (i) What do you mean by principal of parity checking. Explain in detail. 8
- (ii) Explain the BCD codes in detail. Also explain why these codes are used. 8

Unit-II

4. (i) What do you mean by Boolean algebra. Also explain some Boolean algebraic theorems. 8
- (ii) What do you mean by canonical and standard form of Boolean functions. Explain. 8
5. (i) Minimize the four Variable Logic functions 8
- $$f(A,B,C,D) = ABC\bar{D} + \bar{A}BCD + \bar{A}\bar{B}\bar{C} + \bar{A}\bar{B}\bar{D} + A\bar{C} + A\bar{B}C + \bar{B}$$
- (b) What do you mean by don't care conditions. Explain with a suitable example. 8

Unit-III

6. (i) What do you mean by Digital Signals. Give a brief description. 8
- (b) Explain the different Basic gates and universal gates with their truth tables. 8
7. (i) What do you mean by combinational logic. Also explain its design procedures, analysis procedures and its characteristics as well. 16

Unit-IV

- 8. (i) What do you mean by code convertors. Explain in detail. 8**
- (ii) What do you mean by BCD to seven segment decoder? Explain. 8**
- 9. Explain the following : 16**
- (i) Full subtractor**
- (ii) Demultiplexer**