National Institute of Technology, Delhi

Name of the Examination: B. Tech

Branch	**: ECE**	**Semester**	**: III**
Title of the Course	**: Digital Electronics**	**Course Code**	**: ECB 202**
Time: 2 Hours		**Maximum Marks: 25**	

Note:

- **All Questions are compulsory.**

Q1. Design a 1-bit comparator circuit using universal logic gates. 3

Q2. Implement the following function using a 4 to 16 line decoder. 3
$F(a,b,c,d) = a\bar{b} + acd + d + b\bar{c}$

Q3. Implement a full adder circuit using 2 half adders and basic logic gates. 3

Q4. Find the minimal SOP and POS (both) for the following functions: 3
$f(A,B,C,D) = \sum m(0,2,4,6,8,10,14,15).d(0,7,12)$

Q5. Explain the function of parity generator and design an even parity generator circuit. 3

Q6. Design a logic circuit that accepts a 3 bit binary number and generates an output binary number equal to the square of the input number. 5

Q7. Draw the circuit of 4 bit BCD adder and explain its function with the help of 4-bit BCD number addition example. 5

********** END OF THE QUESTION PAPER **********