

National Institute of Technology, Hamirpur
Department of Electronics and Communication Engineering
End Semester Examination, 2020

Course: Digital Electronics and Logic Design (EC-211)
Class: B. Tech, EE (3rd Sem.)

Time: 2 Hours
Max Marks: 50

- Note:** 1. Attempt all the questions.
2. Assume missing data appropriately.
3. Marks of each question is given in the right side of each question in square bracket.
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1. (i) Design a circuit which converts 3-bit binary number to its corresponding Gray code. [5+3+2]
(ii) A bit stream 10011101 is transmitted using the standard CRC method. The generator polynomial is x^3+1 . What is the actual bit string transmitted?
(iii) Convert BC70.0E to octal.
2. (i) Write the various characteristics of digital ICs. [5+3+2]
(ii) Implement the EXNOR and EXOR using CMOS logic.
(iii) Prove that when the outputs of EXNOR and EXOR are equal?
3. (i) Minimize the following Boolean function using tabular method: [10+5]
 $F(A,B,C,D)=\sum m(2,3,4,6,9,11,12,13)$
(ii) Minimize the following Boolean function using VEM method:
 $F(A,B,C,D)=\sum m(0,1,4,5,6,7,11,15)$
4. (i) Design a synchronous counter using D-FF that goes through states 0, 1, 2, 4, 0... . The unused states must always go to zero (000) on the next clock pulse. [5+7+3]
(ii) What is the decoding Error in ripple counter? Explain with the timing diagrams and how to remove it?
(iii) Implement $F(A,B,C,D)=\sum m(1,3,4,11,12,13,14,15)$ using MUX, consider literal A as input.