Department of Electronics and Communication

NATIONAL INSTITUTE OF TECHNOLOGY SRINAGAR
MAJOR EXAMINATION

Course: Digital Electronics and Logic Design
Semester: 4th (CSE)
Date: 11/06/19

Time: 3 hours
Max Marks: 60
Code: ECE-403

Note: Attempt any 4 questions and draw diagrams wherever necessary.

Q1. (a) What are the ways to represent signed numbers? Explain with examples. [5]
(b) Apart from Hamming codes how is parity used for error detection and correction? Explain with an example. [5]
(c) How do we convert binary codes to gray codes? What are the properties of gray codes. Give its application. [5]

Q2. (a) Explain working of a multiplexer. Give its applications. How are they cascaded? [5]
(b) Implement the following function using: [5]
$F(A,B,C,D) = \Sigma_m(2,3,6,7,8,12,14,15)$
1. 8:1 MUX
2. 4:1 MUX

(c) Explain ring counter along with its logic diagram, truth table and timing diagram. [5]

Q3. (a) Design a 3-bit asynchronous up- down counter using positive edge triggered JK-flipflops. Explain its working. [7.5]
(b) Design a 4-bit synchronous odd counter using negative edge triggered D-flipflops. Explain its working as well. [7.5]

Q4. Implement 4 bit binary to gray code convertor using: [15]
a) PROM
b) PLA
c) PAL
Explain the distinction between them.

Q5. (a) Design a sequence detector that detects 10010 using moore model. [7.5]
(b) Explain the working of Successive Approximation type ADC in detail. [7.5]

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