Dronacharya College of Engineering, Gurgaon

Department of Electronics and Computers Engineering

Subject:Digital Electronics(EC-412-F) **Semester/Branch: IV** ECS

Important Questions

Section A

Q1. What is flip flop? Different types of flip flops with truth table and diagram.

Q2. Conversion of flip flops

Q3. Explain edge triggered and level triggered flip flop. (Hint: Clock, levels, edges, flip flop working, difference between clocked and unclocked flip flop, timing diagram using some input and then corresponding output using diff levels and edges).

Q4.Race around condition

Section B

Q1. Modulo – N Ripple Counter (N is no of bits)

Q2. Modulo – M or Divide by M Ripple Counter (where $M < 2^N$ and N is no of bits)

Q3. Asynchronous Down Counter, Up/Down Counter

Q4. Design of Synchronous Counter (N is no of bits)

Q5. Ring Counter and Johnson Counter

Section C

Q1 Register, Different types of registers (SISO, SIPO, PIPO, PISO, bidirectional, universal).

Q2.Counters, Synchronous Counter, Asynchronous (Ripple) Counter

Q3. What is the range of unsigned decimal values that can be represented in 10 bits?

What is the range of signed decimal values using the same number of bits?

Q4. The reason why the sign –magnitude method for representing signed numbers is

not used in most computers can readily be illustrated by performing the

following.

(a) Represent +12 in 5 bits using the sign –magnitude form.

(b)Represent -12 in 5 bits using the sign –magnitude form.

(c)Add the two binary numbers and note that the sum does not look anything like

zero.

Section D

Q1 Perform the following operations in the 2's complement system. Use 8 bits (including sign bit) for each number. Check your results by converting the binary result back to decimal

a. Add +9 to +6.
b. Add +14 to -17.
c. Add +19 to -24.
d. Add -48 to -80.
e. Subtract +16 from +17.
f. Subtract +21 from -13.
g. Subtract -36 from -15.
h. Add +17 to -17.
i. Subtract -17 from -17.

Q 2. Perform the following operations in the 2's complement system. Use 8 bits (including sign bit) for each number. Show that overflow occurs in each case

a. Add +9 to +6.
b. Add +14 to -17.

Q 3. Multiply the following pairs of binary numbers and check by doing multiplication in decimal.

(a) 111 x 101
(b) 1011 x 1011
(c) 101.101 x 110.010
(d) .1101x .1011

Q 4. Perform the divisions. Check the results by doing division in decimal.

(a) 1100 ÷ 100
(b) 111111 ÷ 1001
(c) 10111 ÷ 100
(d) 10110.1101 ÷ 1.1