SHAHEED BHAGAT SINGH STATE TECHNICAL CAMPUS, FEROZEPUR

ROLL No: | | | | | | | | | | | | Total number of pages:[2]

B.Tech. || ECE || 3rd Sem

Digital Electronics (RP)

Subject Code: BTEC-303A

Paper ID: M118 (2015 batch onwards)

Time allowed: 3 Hrs Max Marks: 60

Important Instructions:

- **All questions are compulsory**

PART A (10x 2marks)

Q. 1. Short-Answer Questions:

(a) Differentiate Combinational and sequential circuits.
(b) Can adder be used as a Subtractor, If yes explain how?
(c) Differentiate synchronous and asynchronous counters?
(d) What do you mean by Resolution of Digital to Analog Converter?
(e) Differentiate half and full adder.
(f) How role of MUX is different from DEMUX?
(g) Why NAND and NOR gates are called universal gates?
(h) Convert binary to Gray code (1111110011).
(i) List the various types of A/D converters.
(j) Construct the truth table for $Z = x' y + x y'$.

PART B (5×8marks)

Q. 2. Explain the working of Counter Type A/D converter. CO4

OR

Explain the term Resolution, Accuracy of D/A converter. Also explain Successive approximation A/D converter. CO4

Q. 3. Explain the working of JK flip flop, also convert RS flip flop to JK flip flop. CO3

OR

Explain the working of Master-Slave JK Flip-flop. CO3

Q. 4. Solve following function using Q-M method. CO2

$F(A, B, C, D) = \sum (0, 1, 2, 4, 5, 6, 8, 9, 12, 13, 14)$

OR

How would you simplify the Boolean function $f(A, B, C, D) = C' + A'D' + BD'$ using tabulation method? CO2

Q. 5. Design a counter that count in sequence 0-1-2-3-4 and back to initial state using D flip-flops. The counter must avoid lock-out condition. CO3

OR

What is Flip-flop? Design a clocked SR Flip-flop. CO3

Q. 6. What are Signed Numbers? Subtract (+47) – (-23) using two's complement CO1

subtraction method.

OR

What is Grey Code? Represent $(-57)_{10}$ in Sign magnitude, 1's complement and 2's complement representation. CO1