

IPU BCA Semester2: Digital Electronics (Set -1)

Digital Electronics

Q1: Simplify the following expression using Karnaugh's map in product of sum form :
 $F(A, B, C, D) = \Sigma(1, 3, 7, 9, 12, 13, 15)$
Also, draw the logic circuit for the simplified expression.

Q2: Convert the following decimal numbers to binary:
(i) 47.65
(ii) 702.29

Q3: What is a Full Adder ? Give the truth-table and draw the logic diagram for the full adder. Also, explain its functioning.

Q4: A flip-flop called T flipflop has the following characteristics:
T = 0 No change of state
T = 1 Changes the current state of the flip-flop

How will you construct T flip-flop using R-S flip-flop? Draw the logic diagram also.

Q5: What is arithmetic pipelining ? Discuss with an example. Compare and contrast the features,/characteristics of arithmetic pipelining to instruction pipelining .

Q6: Compare and contrast the following :
(a) Random Access and Direct Access
(b) Dedicated and Multiplexed Buses

Q7: What is a ripple counter ? Explain its working with the help of a logic diagram. Compare this ripple counter with synchronous counter.

Q8: Find out the value of the following.
(i) $(11010010)_2 = (X)_8$
(ii) $(AB)_{16} = (X)_2$

Q9: Sum of all minterms of a Boolean function of n variables is 1. Prove this statement for n=3.

Q10: Construct a master-slave flip-flop using two R-S flip-flops.

Q11: Design a 4-bit binary to gray code converter.