

QUESTIONS

Q1) Convert decimal number $(129)_{10}$ into:

- a. Binary
- b. Octal
- c. Hexadecimal

Q2) Do the following:

- a. Using 2's complement arithmetic add $(23.4)_{10}$ and $(91.4)_{10}$
- b. Using 2's complement arithmetic subtract $(216.74)_{10}$ from $(129.58)_{10}$
- c. Using BCD addition add $(387)_{10}$ and $(289)_{10}$

Q3) Do the following:

- a. Convert logic expression $Z=ac[a+b(c+d)]+c(b+cd)$ into product of sums (POS) form.
- b. Convert the same logic expression into sum of products (SOP) form.

Q4) $F=(X+Y'+Z)(X'+A+B+Z)(X'+Y'+Z')(X'+Y'+A+B)(Y'+Z+A+B)$ Simplify the logic expression using Consensus theorem.

Q5) $F=(ax+by)(cx+dy)+(a+b)(x+y)[a+axy+b+bx+yd'+ay(x+yz+cd)]$ Prove that $F=(a+b)(x+y)$ using simplification laws.

Q6) a) $F=(ab+c+d)(a+b+cd)$ Find the maxterms of logic expression and write the result in decimal notation. (Exp: $F=\prod M(0,1,6,\dots,14)$).

b) $F=ab'c+ad+(bc+d')(bc+d)$ Find the minterms of logic expression and write the result in decimal notation. (Exp: $F=\sum m(0,1,6,\dots,14)$).

Q7) $F=(ax+by)(cx+dy)+(a+b)(x+y)[a+axy+b+bx+yd'+ay(x+yz+cd)]$ Prove that $F=(a+b)(x+y)$ using simplification laws.