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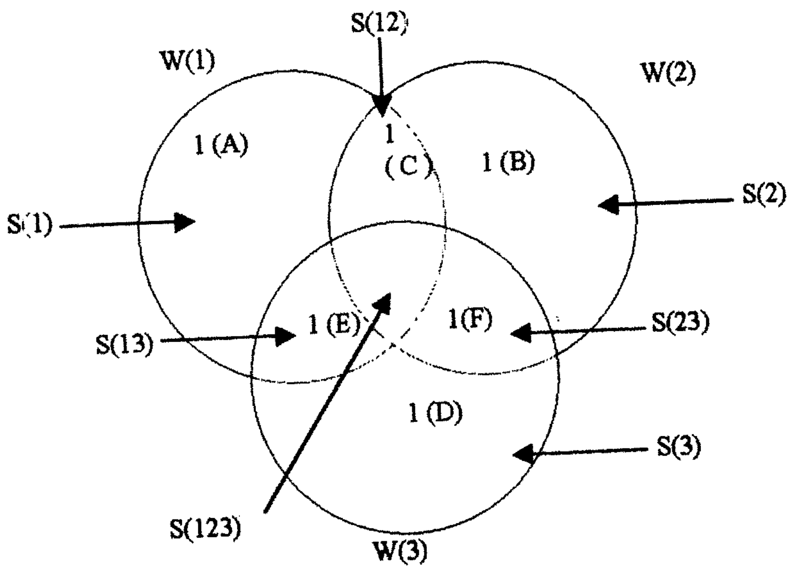
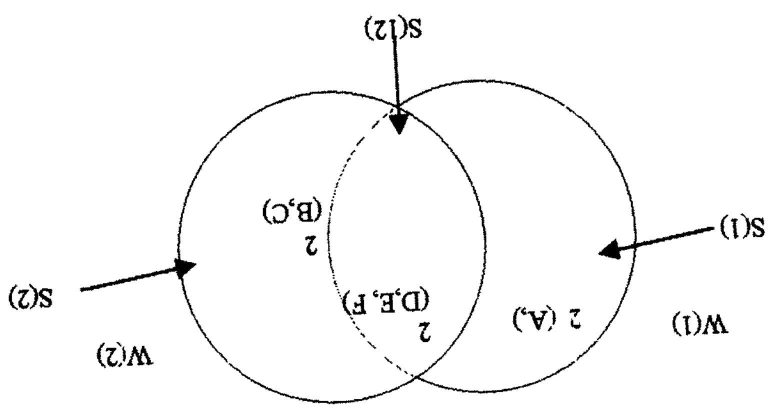


W(1)
S(12)
W(2)
1 (A)
1
(C)
1 (B)
S(1)
S(2)
S(13)
1 (E)
1(F)
S(23)
1 (D)
S(3)
S(123)
W(3)



S(12)
S(1)
S(2)
2
(B,C)
2
(D,E, F)
2 (A,)
W(1)
W(2)

$$= 2^{p-s}\left[\binom{s}{1} + \binom{s}{3} + ...\binom{s}{s}\right] \tag{B.1}$$

We know the Binomial Series,

$$\left[\binom{s}{0} + \binom{s}{1} + ...\binom{s}{s}\right] = 2^s \tag{B.2}$$

If s is an odd then, we have

$$\binom{s}{1} = \binom{s}{s-1}, \binom{s}{3} = \binom{s}{s-2}, ...\binom{s}{s} = \binom{s}{s-s} \tag{B.3}$$

$(B.2)$ can be written as

$$\left[\binom{s}{1} + \binom{s}{3} + ...\binom{s}{s}\right] + \left[\binom{s}{0} + \binom{s}{2} + ...\binom{s}{s-1}\right] = 2^s$$

Then $(B.3) \Rightarrow$

$$2\left[\binom{s}{1} + \binom{s}{3} + ...\binom{s}{s}\right] = 2^s$$

$$\left[\binom{s}{1} + \binom{s}{3} + ...\binom{s}{s}\right] = 2^{s-1} \tag{B.4}$$

substituting $(B.4)$ in $(B.1)$, we get

$$n(O) = 2^{p-s}\{2^{s-1}\} = 2^{p-1}.$$

Since $O \cup E = S$ and $\#S = 2^p - 1$, we have

$$n(E) = (2^p - 1) - (2^{p-1}) = 2^{p-1} - 1$$

Similarly this can be proved for even number.