

Question 4

(2 marks)

$f(x_1, x_2, \dots, x_n)$ is said to be a symmetric function if its value remains unchanged on permuting the inputs. How many symmetric functions are possible with n inputs?

Solution:

If f is symmetric then $f(x_1, x_2, \dots, x_n)$ depends only on the number of x_i 's that are 1.

Thus f is completely determined by $n+1$ values since number of 1's is either $0, 1, 2, \dots, n$.

Therefore, number of f 's which are symmetric = 2^{n+1}