B.Sc - II PAPER - III

Permutations

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Equality of two permutation

Let f and g be two permutations on a set X. Then we define $f = g$ if $f(x) = g(x) \forall x \in X$.

Example: Let f and g be given by

$$f = \begin{pmatrix} 1 & 2 & 3 & 4 \\ 2 & 4 & 3 & 1 \end{pmatrix},$$

$$g = \begin{pmatrix} 2 & 1 & 4 & 3 \\ 4 & 2 & 1 & 3 \end{pmatrix}$$

Evidently $f(1) = 2$, $f(2) = 4$

$f(3) = 3$, $f(4) = 1$

from which we have

$f(1) = 2 = g(1)$, $f(3) = 3 = g(3)$

$f(2) = 4 = g(2)$, $f(4) = 1 = g(4)$

Thus $\Rightarrow f(x) = g(x) \forall x \in \{1, 2, 3, 4\}$

$\Rightarrow f = g$