MATRIX TRANSFORMATIONS BETWEEN $c_I(\Delta) \cap l_\infty(\Delta)$, $c_I(\Delta^2) \cap l_\infty(\Delta^2)$, $c_I(\Delta^m) \cap l_\infty(\Delta^m)$ AND c_I

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ABSTRACT

Let l_∞, c and c_0 be the linear spaces of bounded, convergent and null sequences, respectively. In 1981, H. Kızmaz defined $l_\infty(\Delta)$, $c(\Delta)$, and $c_0(\Delta)$ spaces with $\Delta x = (\Delta x_n) = (x_n - x_{n+1})$ where $n \in \mathbb{N} = \{1, 2, ...\}$. He then characterized some matrix transformations such that $A \in (E', F)$ and $A \in (E, F')$ where E and F denote one of the sequence spaces l_∞ and c; E' and F' denote one of the sequence spaces $l_\infty(\Delta)$ and $c(\Delta)$. In this study we establish some results for matrix transformations such that $A \in (c_I(\Delta) \cap l_\infty(\Delta), c_I)$ where $A = (a_{nk})$ is a nonnegative matrix, $I \subseteq 2^{\mathbb{N}}$ is an admissible ideal, c_I is the space of all $I-$convergent sequences and,

$$\begin{aligned} c_I(\Delta) &= \{x = (x_n) : (\Delta x_n) \in c_I\} \\ l_\infty(\Delta) &= \{x = (x_n) : (\Delta x_n) \in l_\infty\} \end{aligned}$$

Then we establish some results for matrix transformations such that $A \in (c_I(\Delta^2) \cap l_\infty(\Delta^2), c_I)$ where,

$$\begin{aligned} c_I(\Delta^2) &= \left\{x = (x_n) : (\Delta^2 x_n) \in c_I\right\} \\ l_\infty(\Delta^2) &= \left\{x = (x_n) : (\Delta^2 x_n) \in l_\infty\right\} \end{aligned}$$

In conclusion we generalize these results for

$$\begin{aligned} c_I(\Delta^m) &= \{x = (x_n) : (\Delta^m x_n) \in c_I\} \\ l_\infty(\Delta^m) &= \{x = (x_n) : (\Delta^m x_n) \in l_\infty\} \end{aligned}$$

where $m \in \mathbb{N}$ and we establish some results for $A \in (c_I(\Delta^m) \cap l_\infty(\Delta^m), c_I)$ matrix transformations.