

For an $n \times n$ matrix algebra over a totally ordered integral domain, necessary and sufficient conditions are derived such that the entrywise lattice order on it is the only lattice order (up to an isomorphism) to make it into a lattice-ordered algebra in which the identity matrix is positive. The conditions are then applied to particular integral domains. In the second part of the paper we consider $n \times n$ matrix rings containing a positive n -cycle over totally ordered rings. Finally a characterization of lattice-ordered matrix ring with the entrywise lattice order is given.