

SECTION-B

2. Determine whether the relation R is a partial order on the set Z where,
 R is defined on Z as, $a R b$ iff $a = 2b$.
3. Show that the intersection of two left ideals of a ring is again a left ideal of the ring.
4. Solve the recurrence relation, $a_n + 5a_{n-1} + 6a_{n-2} = 3n^2 - 2n + 1$.
5. In a group G , show that $(a b)^{-1} = a^{-1}b^{-1}$ for all $a, b \in G$.
6. Prove that a graph G with $e = v - 1$ that has no circuit is a tree.

SECTION-C

7. Let a, b be elements of a Boolean algebra then show that, $(a \vee b)' = a' \wedge b'$.
8. Let H be a subgroup of a group G , then prove that the relation

$$R = \{(x, y) : x, y \in G, x^{-1}y \in H\}$$

is an equivalence relation.

9. Check if the following graphs are isomorphic or not.

