

Mathematics

Year 2008-2011

Answer Any Five Question

1. a) What are proposition?
b) Construct the truth table of the following:-
 - i. $(p \rightarrow q) \wedge p \rightarrow q$
 - ii. $(p \rightarrow q) \wedge (q \rightarrow r) \rightarrow (p \rightarrow r)$
2. i. Define the term relation and equivalence relation.
ii Show that $x \equiv y \pmod{M}$ is an equivalence relation?
3. Definition of semi group and group? Hence show that the set I of all integer with binary operation defined by $a * b = a + b + 1$ is an abelian group i.e $(I, *)$
4. Define a tautology and a contradiction and given examples.
5. a) Let $f: \mathbb{R} \rightarrow \mathbb{R}$ be defined by $f(x) = 2x - 3$ verify that f is one to one and onto
b) Define mapping injective, surjective and bi-jjective mapping.
6. (a) Define a group with example
(b) Show that \mathbb{R} the set of real numbers form a group respect to usual addition.
7. Distinguish ring, integral domain and field with examples.
8. (a) Show that the vectors $a = (6, 2, 3, 4), b = (0, 8, -3, 1), c = (0, 0, 7, -2)$ are linearly independent.
(b) Find a basis of \mathbb{R}^4 generated by.
9. Let set (a, b, c, d, e, f) whose Hasse diagram are given below and let $A = \{b, c, d\}$
 - a. Lower bound of A
 - b. Upper bound of A
 - c. $\text{Glb } A$
 - d. $\text{Lub } A$
 - e. Maximal or minimal element
10. a) Let $V = \{1, 2, 3\}$ consider the set conclusion relation. $(X) = \{\emptyset\} \{1\} \{2\} \{1, 2\}, \{1, 3\} \{2, 3\} \{1, 2, 3\}$ is POSET.
b) Construct a partially ordered set which .
c) Definations of hoj.