**ASSIGNMENT NO - 1**

**Q-1. Determine whether each of the following sets is well – ordered. Either give a proof using the well - ordering property of the set of positive integers or give an example of a sub set of the set with no smallest element.**

1. **The set of negative integers.**
2. **The set of integers greater than 5.**
3. **The set of even positive integers.**
4. **The set of positive rational numbers.**
5. **The set of positive rational numbers that can be written in the form , where is positive integer**

**Q – 2. Show that if and are positive integers, then there is a smallest positive nonnegative integer of the form**

**Q – 3. Prove that both the sum and product of two rational numbers are rational.**

**Q – 4. Prove or disprove each of the following statements.**

1. **The sum of a rational and an irrational number is irrational**
2. **The sum of two irrational numbers is irrational**
3. **The product of a rational number and an irrational number is irrational number**
4. **The product of two irrational numbers is irrational.**

**Q – 5. Find all positive integers such that**

**Q – 6. Show that every positive integer can be written as the sum of distinct Fibonacci numbers.**

**Q – 8. Let Then, show that,**

**Q – 9. Prove that, for every positive integer**

**Q – 10. Use mathematical induction to prove that: , for every positive integer**

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