**Mid-term Exam Question paper**

**Total marks: 100**

**Q1 [10 marks]**

Choose a prime number from the range of 50 to 100. We will call it P. Write in Details

**Q2 [15 marks]**

Find the binary representation of P. You must show the process.

**Q3 [10 marks]**

You and your friends in class might be choosing different values for P. Can anybody choose a P that is an odd number? Explain your answer.

**Q4 [15 marks]**

Ternary numbers are formed with a number system with base 3. Given the ternary number 10212, find its decimal value. Write in Details

**Q5 [20 marks]**

Build a sieve of Eratosthenes to determine if 19 is a prime number. Show the state of the table at each step.

**Q6 [15 marks]**

Take two natural numbers X and Y. If X \* Y = Z, is Z even or odd when X and Y -

(Case 1) both are even: even / odd

(Case 2) both are odd: even / odd

(Case 3) One of them is odd, the other one is even: even / odd

**Note: (Answer in even or odd)** Write in Details

**Q7 [15 marks]**

Find out all the divisors of 72 and 132 separately. What are the numbers that appear in both of the divisor lists?