XI Maths Worksheet

Time: 30 min **Chapter#14. Mathematical Reasoning** **Full Marks:**

Q.1 Using the words “necessary and sufficient” rewrite the statement “The integer n is odd if and only if n^2 is odd”. Also check whether the statement is true.

Q.2 For the given statement identify the necessary and sufficient conditions :
If you drive over 80 km per hour, then you will get a fine.

Q.3 Write the converse of the following statements :

(i) If a number n is even, then n^2 is even.
(ii) If you do all the exercises in the book, you get an A grade in the class.
(iii) If two integers a and b are such that a > b, then a- b is always a positive integer.

Q.4 Write the negation of the following statements :
(i) p : For every real number x, $x^2 > x$.
(ii) q : There exist a rational number x such that $x^2 = 2$.
(iii) r : All students study mathematics at the elementary level.

Q.5 Find the component statements of the following compound statements and check whether they are true or false.

(i) Number 3 is prime or it is odd.
(ii) All integers are positive or negative.
(iii) 100 is divisible by 3, 11 and 5.

Q.6 Identify the quantifier in the following statements and write the negation of the statements.

(i) There exists a number which is equal to its square.
(ii) For every real number x,x is less than x+1.
(iii) There exists a capital for every state in India.

Q.7 Check whether the following statement is true or not.
If $x,y \in Z$ are such that x and y are odd, then xy is odd.