

**Important Questions 2010**  
**Class-XII- Maths**  
**Mathematical Reasoning**

**Q.1.** Write the negation of the following statements:

- (i) The number 2 is greater than 7.
- (ii) All triangles are not equilateral triangle.
- (iii) Australia is a continent.
- (iv) There does not exist a quadrilateral which has all its sides equal.
- (v) Every natural number is greater than 0.
- (vi) The sum of 3 and 4 is 9.

**Q.2.** 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.3.** State whether the “Or” used in the following statements is “exclusive “or” inclusive. Give reasons for your answer.

- (i) Sun rises or Moon sets.
- (ii) To apply for a driving licence, you should have a ration card or a passport.
- (iii) All integers are positive or negative.

**Q.4.** Write the contrapositive of the following statements :

- (i) If a triangle is equilateral, it is isosceles.
- (ii) If  $x$  is a prime number, then  $x$  is odd.

**Q.5.** 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. 6.** Check whether the following statement is true or not.

If 

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**Q.7.** 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.8.** Rewrite the following statements in the form of “ $p$  if and only if  $q$ ”.

(i)  $p$  : If you watch television, then your mind is free and if your mind is free, then you watch television.

(ii)  $q$  : For you to get an A grade, it is necessary and sufficient that you do all the homework regularly