

## Class 11 Maths Chapter 14 Mathematical Reasoning MCQs For Practice

### 1. Which of the following is a statement?

- (a) There are 35 days in a month.
- (b) Mathematics is difficult
- (c) May you live long
- (d) All of the above

### 2. The negation of the statement “ All integers are rational numbers” is:

- (a) All integers are not rational numbers
- (b) There exists an integer that is not a rational number
- (c) Both a & b
- (d) None of the above

### 3. The truth set of the open sentence $p(x): x + 5 < 9, x \in \mathbb{N}$ is

- (a)  $\{x \in \mathbb{N} \mid x < 4\}$
- (b)  $\{x \in \mathbb{N} \mid x + 5 < 9\}$
- (c)  $\{1, 2, 3\}$
- (d) All of the above

### 4. The contrapositive statement of $p \Rightarrow q$ is

- (a)  $q \Rightarrow p$
- (b)  $\sim p \Rightarrow q$
- (c)  $p \Rightarrow \sim q$
- (d)  $\sim q \Rightarrow \sim p$

### 5. The converse of the statement “ Something is cold $\Rightarrow$ it has low temperature” is:

- (a) If something does not have a low temperature, then it is not cold
- (b) If something has a low temperature, then it is cold
- (c) Both a & b
- (d) None of the above

### 6. Which of the following is a biconditional statement?

- (a)  $p \Leftrightarrow q$
- (b)  $(p \Rightarrow q) \wedge (q \Rightarrow p)$
- (c) Both a & b
- (d) None of the above

### 7. The contrapositive statement of “ If x is a prime number, then x is odd” is:

- (a) If x is not a prime number, then also x could be odd.
- (b) If x is not an odd number, then it is not prime.
- (c) If x is an odd number, then it is prime.
- (d) None of the above

**8. Which of the following is a biconditional statement?**

- (a) If it is an odd number then it is a multiple of 3
- (b) Having four sides is necessary but not sufficient for being a square.
- (c) Having a son is sufficient but not necessary for being a parent.
- (d) Matrix A is invertible if and only if  $|A|$  is non-zero.

**9. If  $p \Rightarrow (q \vee r)$  is false, then the truth values of p, q, r are respectively**

- (a) T, F, F
- (b) F, F, T
- (c) F, T, F
- (d) F, F, F

**10.  $(p \wedge \sim q) \wedge (\sim q \wedge q)$  is**

- (a) a tautology
- (b) a contradiction
- (c) neither a tautology nor a contradiction
- (d) both a tautology and contradiction

\*\*\*\*\* ANSWER KEYS\*\*\*\*\*

Q.1 - (a)      Q.2 - (c)      Q.3 - (d)      Q.4. - (d)      Q.5 - (b)  
Q.6 - (c)      Q.7 - (b)      Q.8 - (d)      Q.9 - (a)      Q.10 - (b)