

Name: _____					Subject: Mathematics	Class: 10 <sup>th</sup>	Time: 80 minutes	Total Marks:	30
Chapter No.05			MJDexpert.com			Obtained marks			

**Note:** Please attempt any 10 short questions from Question 2. Also, attempt both parts of Question 3. Cutting and removal of any content is strictly prohibited.

<b>Q#1</b>	<b>Circle the correct option</b>				<b>1×6=6</b>
1. A set $Q = \left\{ \frac{a}{b} \mid a, b \in \mathbb{Z} \wedge b \neq 0 \right\}$ is called a set of:					
a) Rational Numbers		b) Irrational Numbers		c) Whole Numbers	d) Natural Numbers
2. The different number of ways to describe a set are:					
a) 1		b) 2		c) 3	d) 4
3. If $A \subseteq B$ then $A - B$ is equal to:					
a) A		b) B		c) $B - A$	d) $\phi$
4. Power set of an empty set is:					
a) $\{\phi\}$		b) $\{\phi, \{a\}\}$		c) $\{a\}$	d) $\phi$
5. A function is called ... Function if at least one element in B is not an image of some elements of set A.					
a) One-one		b) Onto		c) Into	d) None of these
6. If $A \subseteq B$ , then $A \cap B$ is equal to:					
a) A		b) B		c) $\phi$	d) None of these
<b>Q#2</b>	<b>Attempt all the short questions</b>				<b>2×8=16</b>
i. If $A = \{2, 3, 5, 7\}$ , $B = \{3, 5, 8\}$ , $U = \{1, 2, 3, \dots, 10\}$ , then find: $A - B$					
ii. If $X = \phi$ , $Y = \mathbb{Z}^+$ , $T = \mathbb{O}^+$ , then find: $X \cup T$					
iii. If $A = \{1, 3, 5, 7, 9\}$ , $B = \{1, 4, 7, 10\}$ and $U = \{1, 2, 3, 4, \dots, 10\}$ , then verify $A - B = A \cap B'$ .					
iv. If $U = \mathbb{N}$ then verify De-Morgan's laws by using $A = \phi$ and $B = P$ .					
v. If $A = \{1, 2, 3\}$ and $B = \{2, 5\}$ , then find $A \times B$ and $B \times A$ .					
vi. Find a and b, if $(3 - 2a, b - 1) = (a - 7, 2b + 5)$					
vii. If $L = \{a, b, c\}$ and $M = \{d, e, f, g\}$ , then find two binary relations in $L \times M$ .					
viii. Define subset and give example.					
<b>Q#3</b>	<b>Write detailed answer of the following questions</b>				<b>4×2=8</b>
a) If $A = \{1, 2, 3, 4, 5, 6\}$ , $B = \{2, 4, 6, 8\}$ , $C = \{1, 4, 8\}$ , prove the identity: $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$					
b) If $A = \{1, 3, 5, 7, 9\}$ , $B = \{1, 4, 7, 10\}$ and $U = \{1, 2, 3, 4, \dots, 10\}$ , then verify $(A \cap B)' = A' \cup B'$ .					