



1	The range of the relation $R = \{(x, x^2) : x \text{ is a prime number less than } 15\}$ is (a) $\{2, 3, 5, 7\}$ (b) $\{2, 3, 5, 11\}$ (c) $\{2, 3, 5, 7, 11, 13\}$ (d) $\{4, 9, 25, 49, 121, 169\}$
2	If the ordered pairs $(a + 2, 4) = (5, 2a + b)$ are equal, then the value of $a$ and $b$ are (a) $(2, -2)$ (b) $\{3, -2\}$ (c) $\phi$ (d) $\{2, 3\}$
3	If there are 1024 relations from a set $A = \{1, 2, 3, 4\}$ to a set $B$ , then the number of elements of $B$ is: (a) 3 (b) 2 (c) 4 (d) 8
4	For two sets $A$ and $B$ , given $n(A \times B) = 6$ and three of the elements of $A \times B$ are $(2, 5)$ , $(4, 6)$ , $(8, 6)$ . Then the remaining elements are (a) $(2, 6)$ , $(4, 5)$ , $(8, 5)$ (b) $(2, 4)$ , $(4, 8)$ , $(5, 6)$ (c) $(2, 6)$ , $(4, 5)$ , $(4, 8)$ (d) $(2, 4)$ , $(4, 5)$ , $(6, 8)$
5	The range of the Signum function defined by $f(x) = \begin{cases}  x  & \text{if } x \neq 0 \\ x & \text{if } x = 0 \end{cases}$ is (a) $\{-1, 1\}$ (b) $(-1, 1)$ (c) $[-1, 1]$ (d) $\{-1, 0, 1\}$
6	If $A$ and $B$ are two sets having $m$ and $n$ elements, respectively and having $p$ elements common. The number of possible relations which can be defined from $A$ to $B$ is (a) $2^{m+n}$ (b) $2^{m+n-p}$ (c) $2^{mn}$ (d) $2^{mn-p}$
7	The domain of $f(x) = \sqrt{25 - x^2}$ is (a) $\mathbb{R}$ (b) $(-5, 5)$ (c) $[-5, 5]$ (d) $(-\infty, 5)$
8	If $n(A \cap B) = 5$ , then $n((A \times B) \cap (B \times A))$ is equal to. (a) 5 (b) 20 (c) 25 (d) 16
9	The range of the function $f(x) = \frac{x}{1+x^2}$ is (a) $\left[-\frac{1}{2}, \frac{1}{2}\right]$ (b) $\left[\frac{1}{2}, \frac{1}{4}\right]$ (c) $\left(-\frac{1}{2}, \frac{1}{4}\right)$ (d) $\left(0, \frac{1}{2}\right)$

10	<p>The range of the function <math>f(x) = x - [x]</math> where <math>[x]</math> is the greatest integer less than or equal to <math>x</math> is</p> <p>(a) <math>[0, 1)</math>                      (b) <math>[0, 1]</math>                      (c) <math>(0, 1)</math>                      (d) <math>(0, 1]</math></p>
11	<p>The set B is the range of a constant function. Then, <math>n(B)</math> equals</p> <p>(a) 0                      (b) 1                      (c) 2                      (d) 3</p>
12	<p>Find the domain and range of the relation R, where <math>R = \{(x + 1, x + 5)\}, x \in \{0, 1, 2, 3, 4, 5\}</math> is</p> <p>(a) <math>D = \{0, 1, 2, 3, 4, 5\}, R = \{0, 1, 2, 3, 4, 5\}</math>  (b) <math>D = \{0, 1, 2, 3, 4, 5\}, R = \{5, 6, 7, 8, 9, 10\}</math>  (c) <math>D = \{1, 2, 3, 4, 5, 6\}, R = \{0, 1, 2, 3, 4, 5\}</math>  (d) <math>D = \{1, 2, 3, 4, 5, 6\}, R = \{5, 6, 7, 8, 9, 10\}</math></p>
13	<p>A and B are two sets having 4 and 6 elements respectively and having 3 elements in common. The number of relations that can be defined from A to B</p> <p>(a) <math>2^{21}</math>                      (b) <math>2^{24} - 1</math>                      (c) <math>2^{24} - 3</math>                      (d) <math>2^6</math>                      (e) <math>2^{24}</math></p>
14	<p>There are 4096 relations from a set A to a set B. If the set A has 6 elements, then the number of elements in the set B is:</p> <p>(a) 32                      (b) 2                      (c) 128                      (d) 1024</p>
15	<p>The range of the function <math>f(x) = \frac{3x + 5}{4x - 7}</math> is:</p> <p>(a) <math>\mathbb{R}</math>                      (b) <math>\mathbb{R} - \{7\}</math>                      (c) <math>\mathbb{R} - \left\{\frac{1}{4}\right\}</math>                      (d) <math>\mathbb{R} - \left\{\frac{3}{4}\right\}</math></p>