

1.

1 If $n(A \times B) = 6$ and $A = \{1, 3\}$ then $n(B)$ is

(1) 1 (2) 2

(3) 3 (4) 6

2. $A = \{a, b, p\}$, $B = \{2, 3\}$, $C = \{p, q, r, s\}$ then $n[(A \cup C) \times B]$ is

(1) 8 (2) 20

(3) 12 (4) 16

3 If $A = \{1, 2\}$, $B = \{1, 2, 3, 4\}$, $C = \{5, 6\}$ and $D = \{5, 6, 7, 8\}$ then state which of the following statement is true

(1) $(A \times C) \subset (B \times D)$ (2) $(B \times D) \subset (A \times C)$

(3) $(A \times B) \subset (A \times D)$ (4) $(D \times A) \subset (B \times A)$

4 If there are 1024 relations from a set $A = \{1, 2, 3, 4, 5\}$ to a set B , then the number of elements in B is

(1) 3 (2) 2

(3) 4 (4) 6

5 The range of the relation $R = \{(x, x^2) \text{ a prime number less than } 13\}$ is

(1) $\{2, 3, 5, 7\}$ (2) $\{2, 3, 5, 7, 11\}$

(3) $\{4, 9, 25, 49, 121\}$ (4) $\{1, 4, 9, 25, 49, 121\}$

6 If the ordered pairs $(a + 2, 4)$ and $(5, 2a + b)$ are equal then (a, b) is

(1) $(2, -2)$ (2) $(5, 1)$

(3) $(2, 3)$ (4) $(3, -2)$

7. Let $n(A) = m$ and $n(B) = n$ then the total number of non-empty relations that can be defined from A to B is

- (1) m^n (2) n^m

- (3) $2^m - 1$ (4) 2^n

8. If $\{(a, 8), (6, b)\}$ represents an identity function, then the value of a and b are respectively

- (1) (8, 6) (2) (8, 8)

- (3) (6, 8) (4) (6, 6)

9. Let $A = \{1, 2, 3, 4\}$ and $B = \{4, 8, 9, 10\}$.

A function $f: A \rightarrow B$ given by $f = \{(1, 4), (2, 8), (3, 9), (4, 10)\}$ is a

- (1) Many-one function (2) Identity function

- (3) One-to-one function (4) Into function

10. If $f(x) = 2x^2$ and $g(x) = 1/3x$, then $f \circ g$ is

- (1) $3/2x^2$ (2) $2/3x^2$

- (3) $2/9x^2$ (4) $1/6x^2$

11. If $f: A \rightarrow B$ is a bijective function and if $n(B) = 7$, then $n(A)$ is equal to

- (1) 7 (2) 49

- (3) 1 (4) 14

12. Let f and g be two functions given by

$f = \{(0, 1), (2, 0), (3, -4), (4, 2), (5, 7)\}$

$g = \{(0, 2), (1, 0), (2, 4), (-4, 2), (7, 0)\}$

then the range of $f \circ g$ is

- (1) $\{0, 2, 3, 4, 5\}$ (2) $\{-4, 1, 0, 2, 7\}$

- (3) $\{1, 2, 3, 4, 5\}$ (4) $\{0, 1, 2\}$

13. Let $f(x) = \sqrt{1+x^2}$ then

- (1) $f(xy) = f(x)f(y)$ (2) $f(xy) \geq f(x)f(y)$

- (3) $f(xy) \leq f(x)f(y)$ (4) None of these

14 If $g = \{(1,1), (2,3), (3,5), (4,7)\}$ is a function given by $g(x) = \alpha x + \beta$ then the values of α and β are

(1) $(-1,2)$ (2) $(2,-1)$

(3) $(-1,-2)$ (4) $(1,2)$

15. $f(x) = (x+1)^3 - (x-1)^3$ represents a function which is

(1) linear (2) cubic

(3) reciprocal (4) quadratic