Sri Raghavendra Tuition Center

Unit 1

10th Standard

Maths

Date : 15-10-24

Reg.No. : | | | | | | |

Exam Time : 01:30 Hrs

Total Marks : 50

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I. Multiple Choice Questions. 10 x 1 = 10

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

(a) 1 (b) 2 (c) 3 (d) 6

2) 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

(a) 3 (b) 2 (c) 4 (d) 8

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

(a) (8,6) (b) (8,8) (c) (6,8) (d) (6,6)

4) 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 o g is

(a) {0,2,3,4,5} (b) {–4,1,0,2,7} (c) {1,2,3,4,5} (d) {0,1,2}

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

(a) linear (b) cubic (c) reciprocal (d) quadratic

6) Let $f(x) = x^2 - x$, then $f(x- 1) - (x + 1)$ is _____

(a) 4x (b) 2-2x (c) 2-4x (d) 4x-2

7) Given $f(x) = (- 1)^x$ is a function from N to Z. Then the range of f is _____

(a) {1} (b) N (c) {1 ,-1} (d) Z

8) If n(A) = p, n(B) = q then the total number of relations that exist between A and B is _____

(a) 2^p (b) 2^q (c) 2^{P+q} (d) 2^{pq}

9) Let R be a relation from set A to a set B, then _____

(a) $\mathbf{R} = A \cup B$ (b) $A \cap B$ (c) $R \subseteq A \times B$ (d) $R \subseteq B \times A$

10) If {(7,11),(5,a)} represents a constant function then the value of a is

(a) 7 (b) 11 (c) 5 (d) 9

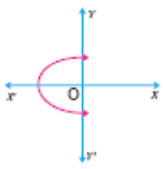
II. Answer all 2 Mark's. 5 x 2 = 10

11) Let f(x) = 2x + 5. If $x \neq 0$ then find $\frac{f(x+2)-f(2)}{x}$.

12) Represent the function $f(x) = \sqrt{2x^2 - 5x + 3}$ as a composition of two functions.

13) If f(x) = 2x + 3, g(x) = 1 - 2x and h(x) = 3x. Prove that f o(g o h) = (f o g) o h.

14) Determine whether the graph given below represent functions. Give a reason for your answer concerning the graph.



15) Let A = {1,2,3} and B = {x| x is a prime number less than 10}. Find A x B and B x A.

III. ANSWER ALL 5 Mark's. 4 x 5 = 20

16) Given A = {1,2,3}, B = {2,3,5}, C = {3,4} and D = {1,3,5}, check if (A ∩ C) x (B ∩ D) = (A x B) ∩ (C x D) is true?

17) If the function f: R⟶ R defined by

$$f(x) = \begin{cases} 2x+7, x < -2 \\ x^2 - 2, -2 \le x < 3 \\ 3x - 2, x \ge 3 \end{cases}$$

(i) f(4)

(ii) f(-2)

(iii) f(4) + 2f(1)

(iv) $\frac{f(1)-3f(4)}{f(-3)}$

18) Let A = {1,2,3,4} and B = { 2, 5, 8, 11,14} be two sets. Let f: A ⟶ B be a function given by f(x) = 3x − 1. Represent this function

(i) by arrow diagram

(ii) in a table form

(iii) as a set of ordered pairs

(iv) in a graphical form

19) If $f(x) = x^2$, g(x) = 3x and h(x) = x - 2, Prove that (f o g) o h = f o (g o h).

ALL THE BEST

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