RAVI MATHS TUITION CENTER ,GKM COLONY, CH- 82. PH: 8056206308

10th Relations and Functions test 2

10th Standard

Maths

Exam Time : 00:45:00 Hrs | Total Marks : 30

5 x 1 = 5

1) If the ordered pairs (a+2,4) and (5,2a+b) are equal then (a,b) is
   (a) (2,-2) (b) (5,1) (c) (2,) (d) (3,-2)
2) 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
   (a) m^n (b) n^m (c) 2^{mn}-1 (d) 2^{mn}
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 A={1,2,3,4} and B={4,8,9,10}. A function f: A ⟶ B given by f={(1,4), (2,8), (3,9), (4,10)} is a
   (a) Many-one function (b) Identity function (c) One-to-one function (d) Into function
5) If $f(x)=2x^2$ and $g(x)=\frac{1}{3x}$, then f o g is
   (a) $\frac{3}{2x^2}$ (b) $\frac{2}{3x^2}$ (c) $\frac{2}{9x^2}$ (d) $\frac{1}{6x^2}$

5 x 2 = 10

6) If X = {–5,1,3,4} and Y = {a,b,c}, then which of the following relations are functions from X to Y ? R_1= {(–5,a), (1,a), (3,b)}
7) Find f o g and g o f when f(x)=2x+1 and $g(x)=x^2-2$
8) Represent the function $f(x)=\sqrt{2x^2-5x+3}$ as a composition of two functions.
9) If f(x)=2x+3, g(x)=1-2x and h(x)=3x. Prove that f 0 (f o g) o h.
10) Find x if gff(x) = fgg(x), given f(x) = 3x+1 and g(x)=x+3.

3 x 5 = 15

11) Let f be a function f:N ⟶ N be defined by f(x) = 3x+2, x∈N
    (i) Find the images of 1, 2, 3
    (ii) Find the pre-images of 29, 53
    (ii) Identify the type of function
12) Forensic scientists can determine the height (in cms) of a person based on the length of their thigh bone. They usually do so using the function h(b)=2.47b+54.10 where b is the length of the thigh bone.
    (i) Check if the function h is one – one
    (ii) Also find the height of a person if the length of his thigh bone is 50 cms.
    (iii) Find the length of the thigh bone if the height of a person is 14796 cms.
13) 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) $\frac{f(1)-3f(4)}{f(-3)}$