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MCQs – Unit # 1: F.Sc Part 2
CALCULUS AND ANALYTIC GEOMETRY, MATHEMATICS 12
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# Unit 1: Function & Limits

1) The domain of binary relation $y^2 = -4x$ is,

A) R
B) Z
C) $R^+$
D) Negative real numbers including zero.

2) If S = {a, b, c} then the number of distinct relations on S is

A) 9
B) $2^9$
C) $2^3$
D) $9^2$

3) The domain of the binary relation $2x^2 + 2y^2 = 18$ is

A) R
B) $R^+$
C) Z
D) {- 3, 3}

4) The range of the binary relation $4x^2 + 9y^2 = 36$ is

A) {- 2, 2}
B) {– 3, 3}
C) {- 2, 3}
D) R

5) If R1 = {(x, y) | x, y ∈ R and x >y} is a binary relation then its inverse is

A) {(1, 2), (2, 3)}
B) {(2, 1), (3, 2), (4, 3)}
C) {(x, y) | x = y}
D) {(x, y) | x, y ∈ R and y > x}

6) The graph of the binary relation $y = x^2 – 6x + 5$ represents

A) Line
B) Circle
C) Parabola
D) Ellipse

7) The graph of $R_1$ = {(x, y) | x, y ∈ **R** and y > x} is

A) Line
B) Points on the line y = x
C) All points below the line y = x
D) All points above the line y = x

8) If f (x) = ax + b, where a, b ∈ R, a ≠ 0, then f is called a

A) Constant Function
B) Linear Function
C) Quadratic Function
D) Polynomial Function

9) The graph of a linear function represents a

A) Circle
B) Line
C) Parabola
D) Ellipse

10) The equation having null set as its solution set is

A) x = cos x
B) $x = e^x$
C) x = sin x
D) x = tan x

11) The composition of two functions f and g is defined as (fog) (x) = f {g (x)}, for all x in the set

A) $R_g$
B) $D_g$
C) $D_g \cap D_f$
D) $R_g \cap D_f$

12) If f(x) = x and $g(x) = x^2$ then the value of (fog) (x) is

A) $x^2$

B) x
C) $x^3$
D) $x^4$

13) Let f: S → T be a one – to – one function such that $f(x_1) = 6$ and $f(2) = 6$ then the value of $x_1$ is :
A) 6
B) 2
C) 3
D) 12

14) Let $f(x) = 5x + 3$ then f is
A) One – to – one function
B) Onto function
C) Constant function
D) Both one-to-one and onto function

15) Let : S → S be an identity function and 2 ∈ S, then the value of f(2) is
A) 2
B) – 2
C) 3
D) ½

16) Let g = {(1, 1), (2, 3), (3, 2), (4, 4)} be a function from S onto S, then the value of $g^{-1}$ (2) is,
A) 2
B) 3
C) 4
D) 1

17) Let $f(x) = 5x + 1$, $x \in R$ then value of $f^{-1}$ (6) is,

A) 31
B) 1
C) 6
D) 1/6

18) If $g(x) = 2x + 1$ then the value of $g^2(1)$ is

A) 3
B) 9
C) 7
D) 8

20) The graph of the function y = x and y = tan x intersect at the point

A) $x = \pi/4$
B) $x = 0$
C) $x = \pi/2$
D) $x = \pi/3$

21) The solution set of the equation x = tan x is

A) $\phi$
B) $\{\pi/4\}$
C) {1}
D) {0}

22) The solution set of $2x^3 – 3x^2 + 4x – 5 = 0$ can have at the most,

A) 4 members
B) 3 members
C) 2 members
D) 5 members

23) If $f(x) = 2x^2 – 1$ and $g(x) = 5x + 2$ then value of f[g(2)] is

A) 312
B) 87
C) 287
D) 288

24) The inverse function of the function $y = \frac{x-1}{x+1}, \quad x \neq -1$ is

A) $f^{-1}(y) = \frac{y+1}{y-1}$

B) $f^{-1}(y) = \frac{1-y}{1+y}$

C) $f^{-1}(y) = \frac{1+y}{1-y}$

D) $f^{-1}(y) = \frac{1-y}{y-1}$

25) If $y = \frac{x}{x+2}, \quad x \neq -2$ is a function then the value of $f^{-1}$ (2) is, (Here y = f(x))
A) ½
B) 4
C) ¼
D) – 4

26) If the variable x takes in succession the value $3, 3\frac{1}{2}, 3\frac{2}{3}, 3\frac{4}{5}, 3\frac{5}{8}, \ldots$ then x approaches
A) 4
B) 3
C) $3\frac{5}{8}$
D) 5

27) If h > 0, then as h approaches zero, $\tan(\frac{3p}{2} + h)$ approaches
A) $-\infty$
B) $\infty$
C) 0
D) $-1$

28) The values of $Lim_{h\to 0}\, Co\sec(p+h),\ h>0$ is
A) 0
B) $\infty$
C) $-\infty$
D) $-1$

29) The value of $Lim_{x\to 0}\frac{\sin ax}{bx}$ is
A) a
B) $\frac{a}{b}$
C) b
D) $\frac{b}{a}$

30) The value of $Lim_{x\to\infty}(1+\frac{4}{x})^{\frac{x}{4}}$ is
A) $e^4$
B) $\frac{e}{4}$
C) $\frac{4}{e}$
D) e

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