

त्रैमासिक परीक्षा, 2022-23

MATHS - XII

1. The relⁿ given by :

$R = \{(1, 1), (2, 2), (3, 3), (1, 2), (2, 3)\}$ in the set $\{1, 2, 3\}$ is

(a) symmetrical

(b) reflexive

(c) transitive

(d) trival

2. If $A = \{x \in \mathbb{Z} : 0 \leq x \leq 12\}$ and R is the relⁿ in A given by $R = \{(a, b) : a = b\}$. then, the set of all elements related to 1 is.

(a) $\{1, 2\}$

(b) $\{2, 3\}$

(c) $\{1\}$

(d) $\{2\}$

3. $f : x \rightarrow \gamma$ is onto, if and only if

(a) range of $f = \gamma$

(b) range of $f \neq \gamma$

(c) range of $f < \gamma$

(d) range of $f \geq \gamma$

4. The number of all one-one f^n from set $A = \{1, 2, 3\}$ to itself is.

(a) 2

(b) 6

(c) 3

(d) 1

5. Let f , g and h be functions from \mathbb{R} to \mathbb{R} . Then,

(a) $(f + g) \circ h = f \circ g + g \circ h$

(b) $(f + g) \circ h = f \circ h + g \circ h$

(c) $(f \cdot g) \circ h = (f \circ h) + (g \circ h)$

(d) $(f \cdot g) \circ h = (f \circ g) \cdot (g \circ h)$

6. If $f: \mathbb{R} \rightarrow \mathbb{R}$ is given by $f(x) = 3x - 5$, $f^{-1}(x)$ is

(a) $\frac{1}{3x-5}$

(b) $\frac{x-5}{3}$

(c) $\frac{x+5}{3}$

(d) Not

7. Let $f: \mathbb{R} - \left\{\frac{3}{5}\right\} \rightarrow \mathbb{R}$ be defined by $f(x) = \frac{3x+2}{5x-3}$. then

(a) $f^{-1}(x) = f(x)$

(b) $f^{-1}(x) = -f(x)$

(c) $(f \circ f)(x) = x$

(d) $2f^{-1}(x) = 3f(x)$

8. Let $f: \mathbb{R} \rightarrow \mathbb{R}$ be defined by $f(x) = \frac{1}{x} \forall x \in \mathbb{R}$ then $f(x)$ is

(a) one-one

(b) onto

(c) bijective

(d) $f^n ne$

9. If the binary operations $*$ on Z is defined by

$$a*b = a^2 - b^2 + ab + 4$$

(a) 233

(b) 33

(c) 55

(d) -55

10. Suppose that the function $f : R \rightarrow R$ is defined by $f(x) = 3x$, $f(x)$ is

(a) one - one onto

(b) many - one onto

(c) one - one, but not onto

(d) NONO (Neither one-one nor onto)

11. If $f(x) = \frac{1}{x-1}$ and $g(x) = \frac{x-1}{x+1}$, then the domain of $(f \circ g)(x)$ is -

(a) $\{x \in R \mid x \neq -1\}$

(b) $\{x \in R \mid x \neq 1\}$

(c) $\{x \in R \mid x \neq 1, -1\}$

(d) $\{x \in R \mid x \neq 0, 1, -1\}$

12. The inverse of the function $y = \frac{2^x}{1+2^x}$ is

(a) $x = \log_2 \frac{1}{1-2y}$

(b) $x = \log_2 \left(1 - \frac{1}{y}\right)$

(c) $x = \log_2 \left(\frac{1}{1-y} \right)$

(d) $x = \log_2 \left(\frac{1}{1-y} \right)$

13. The value of $\sin 20^\circ \cdot \sin 40^\circ \cdot \sin 80^\circ$ equals

(a) $\frac{\sqrt{3}}{2}$

(b) $\frac{\sqrt{3}}{4}$

(c) $\frac{\sqrt{3}}{8}$

(d) $\frac{1}{8}$

14. $\tan^{-1}2x + \tan^{-1}3x = \pi/4$ is-

(a) 1

(b) 1/3

(c) 1/2

(d) 1/6

15. If $\sin^{-1} \left(\frac{x}{5} \right) + \operatorname{cosec}^{-1} \left(\frac{5}{4} \right) = \frac{\pi}{2}$, then the value of x is -

(a) a

(b) 3

(c) 4

(d) 5

16. Then eqn $\tan^{-1}x - \cot^{-1}x = \tan^{-1} (1/\sqrt{3})$ has

(a) no solution

- (b) unique solution
- (c) infinite solution
- (d) two solutions

17. If $A = \begin{bmatrix} \alpha & \beta \\ r & \alpha \end{bmatrix}$ is such that $A^2 = I$ then

- (a) $1 + \alpha^2 + \beta r = 0$
- (b) $1 - \alpha^2 + \beta r = 0$
- (c) $1 - \alpha^2 - \beta r = 0$
- (d) $1 + \alpha^2 + \beta r = 0$

18. If A is square matrix such that $A^2 = A$, then $(I + A)^3 - 7A$ is equal to

- (a) A
- (b) $I - A$
- (c) I
- (d) $3A$

19. Value of $\begin{vmatrix} 3 & 8 \\ -1 & 4 \end{vmatrix} = ?$

- (a) -28
- (b) 20
- (c) 28
- (d) -13

20. Area of triangle with vertices (x_1, y_1) , (x_2, y_2) and (x_3, y_3) is

(a) $\Delta = \frac{1}{2} \begin{vmatrix} x_1 & y_1 & 1 \\ x_2 & y_2 & 1 \\ x_3 & y_3 & 1 \end{vmatrix}$

(b) $\Delta = \frac{1}{2} \begin{vmatrix} x_1 & y_1 & 1 \\ y_1 & y_2 & 1 \\ x_3 & y_3 & 1 \end{vmatrix}$

(c) $\Delta = 0$

(d) Not

21. The function $f(x) = \begin{cases} 1, & \text{if } x \neq 0 \\ 2, & \text{if } x = 0 \end{cases}$ is not continuous at

(a) $x = 0$

(b) $x = 1$

(c) $x = -1$

(d) Not

22. If $f(x) = |\sin x|$, then

(a) f is everywhere differentiable

(b) f is everywhere continuous but not differentiable at $[x = x\pi]$, $x \in \mathbb{Z}$

(c) f is everywhere continuous but not differentiable at $x = (2n + 1) \pi/2$, $x \in \mathbb{Z}$

(d) Not <https://www.upboardonline.com>

23. $\log_{x \rightarrow 0} \frac{\sin x}{x} = ?$

(a) 0

(b) 1

(c) -1

(d) +1/2

24. The condition $f(x_1) = f(x_2)$ is

(a) one-one

(b) many-one

(c) onto and into

(d) Not

25. $f''(x) \neq f'(x)$ is correct -

(a) yes

(b) no

(c) $f''(x) = f'(x)$

(d) $f'(x) = -f''(x)$