Karnataka Board

Question Paper

Quaterly Exam 2024
Question Paper

aglasem.com

FIRST QUARTERLY TEST AUGUST 2024

CLASS : II PUC **SUBJECT : MATHEMATICS (35)** **Max. Marks : 40**
TIME : 1 Hr. 30 Mins.

PART - A

I Answer All the Multiple Choice Questions : **7x1=7**

1) Let R be the relation in the set N given by $R = \{(a, b) : a = b-2, b > 6\}$ choose the correct answer.
A) $(2, 4) \in R$ B) $(3, 8) \in R$ C) $(6, 8) \in R$ D) $(8, 7) \in R$

2) In a relation R on the set {1, 2, 3} given by R = {(1, 2) (2, 1)} is
A) Reflexive B) Symmetric C) Transitive D) Equivalence relation

3) If $f : R \to R$ be given by $f(x) = 3x$ then f is
A) one-one and onto. B) many-one and onto.
C) one-one but not onto. D) neither one-one nor onto.

4) The number of all possible matrices of order 3×3 with each entry 0 or 1 is
A) 27 B) 8 C) 81 D) 512

5) $\tan^{-1}\left(\sqrt{3}\right) - \sec^{-1}(-2)$ is equal to
A) π B) $-\pi/3$ C) $\pi/3$ D) $2\pi/3$

6) If $\begin{vmatrix} 3 & x \\ x & 1 \end{vmatrix} = \begin{vmatrix} 3 & 2 \\ 4 & 1 \end{vmatrix}$ then the value of x is
A) 2 B) 4 C) 8 D) $\pm 2\sqrt{2}$

7) The derivative of sin (ax + b) with respect to x is
A) cos (ax + b) B) a sin (ax + b) c) a cos (ax + b) D) $-\cos(ax + b)$

II Answer the following questions by choosing the correct answers in the brackets:3x1=3

$\left[-1, \frac{\pi}{2}, 1, 0\right]$

8) The principal value of $\sin^{-1}(1)$ is _____.

9) If A is a singular matrix then |A| is _____.

10) If $x - y = \pi$ then dy/dx = _____.

PART-B

III Answer any THREE questions : **3x2=6**

11) If $f : R \to R$ and $g : R \to R$ are given by $f(x) = \cos x$ and $g(x) = 3x^2$ find gof(x) and fog(x).

12) Prove that $2\sin^{-1} x = \sin^{-1}\left(2x\sqrt{1-x^2}\right)$, $\frac{-1}{\sqrt{2}} \le x \le \frac{1}{\sqrt{2}}$.

13) Find the equation of line joining (3, 1) and (9, 3) using determinants.

14) If $x^2 + xy + y^2 = 100$ find dy/dx.

15) Find dy/dx if $y = x^{\sin x}$ when $x > 0$.

(P.T.O.)

schools.aglasem.com
aglasem.com

PART-C

IV Answer any THREE questions : **3x3=9**

16) Show that the relation R in the set A={1, 2, 3, 4, 5} given by R = {(a, b) : |a−b| is Even} is equivalence relation.

17) Write in the simplest form $\tan^{-1}\left(\frac{\sqrt{1+x^2}-1}{x}\right), x \neq 0$.

18) Express $A=\begin{bmatrix} 1 & 5 \\ -1 & 2 \end{bmatrix}$ as the sum of a symmetric and a skew-symmetric matrix.

19) Find the value of k, so that the function, $f(x)=\begin{cases} kx^2 & \text{if } x \leq 2 \\ 3 & \text{if } x > 2 \end{cases}$ is continuous at x = 2.

20) Find dy/dx if $x=a(\theta-\sin\theta)$, $y=a(1+\cos\theta)$

PART-D

VI Answer any THREE questions : **5x3=15**

21) Let $f: N \to Y$ be a function defined as f(x) = 4x + 3, where $Y=\{y \in N : y = 4x+3, \text{ for some } x \in N\}$ show that f is invertible. Find the inverse of f.

22) If $A=\begin{bmatrix} 1 \\ -4 \\ 3 \end{bmatrix}$, $B=\begin{bmatrix} -1 & 2 & 1 \end{bmatrix}$. Verify that $(AB)'=B'A'$.

23) Solve by matrix method :
$x-y+z=4$, $2x+y-3z=0$, $x+y+z=2$.

24) If $y=(\tan^{-1}x)^2$ show that $(1+x^2)^2\frac{d^2y}{dx^2}+2x(1+x^2)\frac{dy}{dx}=2$.

25) Show that the matrix $A=\begin{bmatrix} 2 & 3 \\ 1 & 2 \end{bmatrix}$ satisfy the equation $A^2-4A+I=0$. Where I is the identity matrix of order 2 and 0 is the zero matrix of order 2 using this equation find A^{-1}.

*****

schools.aglasem.com
AglaSem Earn while Learn Program. Send your papers and get paid.
Contact: support@aglasem.com
aglasem.com

Sample Papers

- CBSE Sample Papers
- ICSE / ISC Board Sample Papers
- AP Board Sample Papers
- Assam Board Sample Papers
- Bihar Board Sample Papers
- Chhattisgarh Board Sample Papers
- Goa Board Sample Papers
- Gujarat Board Sample Papers
- Haryana Board Sample Papers
- HP Board Sample Papers
- J&K State Board Sample Papers
- Jharkhand Board Sample Papers
- Karnataka Board Sample Papers
- Kerala Board Sample Papers

Sample Papers

- MP Board Sample Papers
- Maharashtra Board Sample Papers
- Manipur Board Sample Papers
- Mizoram Board Sample Papers
- Orissa Board Sample Papers
- Punjab Board Sample Papers
- Rajasthan Board Sample Papers
- Tamil Nadu Board Sample Papers
- Telangana State Board Sample Papers
- Tripura Board Sample Papers
- UP Board Sample Papers
- Uttarakhand Board Sample Papers
- West Bengal Board Sample Papers

