Sardar Kaurey Khan Public Higher Secondary School Muzaffargarh

Paper: Maths **[Units 1-5]** **Class: 9th**

Marks: 15 **Time: 30 Min**

Q.1 Choose the correct answer. **1x15=15**

(i) $\begin{bmatrix} \sqrt{2} & 0 \\ 0 & \sqrt{2} \end{bmatrix}$ is called …….. matrix.

(a) Zero (b) Unit (c) Scalar (d) Singular

(ii) Order of transpose of $\begin{bmatrix} 2 & 1 \\ 0 & 1 \\ 3 & 2 \end{bmatrix}$ is

(a) $3-by-2$ (b) $2-by-3$ (c) $1-by-3$ (d) $3-by-1$

(iii) If $\begin{bmatrix} 2 & 6 \\ 3 & x \end{bmatrix}$ = 0 then x = ……..

(a) -9 (b) -6 (c) 9 (d) 6

(iv) $(27x^{-1})^{\frac{-2}{3}} =$ … … ….

(a) $\frac{\sqrt[3]{x^2}}{9}$ (b) $\frac{\sqrt{x^3}}{9}$ (c) $\frac{\sqrt[3]{x^2}}{8}$ (d) $\frac{\sqrt{x^3}}{8}$

(v) Real part of $2ab\ (i+i^2)is$ … … ..

(a) $2ab$ (b) $-2ab$ (c) $2abi$ (d) $-2i$

(vi) if $z<0$ then $x<y \implies$

(a) $xz<yz$ (b) $xz>yz$ (c) $xz=yz$ (d) None

(vii) If $a^x=n$ Then

(a) $a=\ log_x n$ (b) $x=\ log_n a$ (c) $x=\ log_a n$ (d) $a=\ log_n x$

(viii) The logarithm of any number to itself as base is:

(a) 1 (b) 0 (c) -1 (d) 10

(ix) $log_a c\ \times log_c b$ can be written as:

(a) $log_a c$ (b) $log_c a$ (c) $log_a b$ (d) $log_b c$

(x) The degrees of polynomial $4x^4+2x^2y$ is

(a) 1 (b) 2 (c) 3 (d) 4

(xi) $(3+\sqrt{2})\ (3-\sqrt{2})$ is equal to

(a) 7 (b) -7 (c) -1 (d) 1

(xii) $(\sqrt{a}+\sqrt{b})\ (\sqrt{a}-\sqrt{b})$ is equal to

(a) a^2+b^2 (b) a^2-b^2 (c) $a-b$ (d) $a+b$

(xiii) The factor of x^2-5x+6 are

(a) $x+1,\ x-6$ (b) $x-2\ ,\ x-3$ (c) $x+6, x-1$ (d) $x+2, x+3$

(xiv) Find m so that x^2+4x+m is a complete square.

(a) 8 (b) -8 (c) 4 (d) 16

(xv) What will be added to complete square of $9a^2-12ab$? ……

(a) $-16b^2$ (b) $16b^2$ (c) $4b^2$ (d) $-4b^2$

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Paper: Maths **[Units 1-5]** **Class: 9th**

Marks: 60 **Time: 2 Hours**

Q.2 Note attempt any six parts. $2 \times 6 = 12$

(i) If $\begin{bmatrix} a+3 & 4 \\ 6 & b-1 \end{bmatrix} = \begin{bmatrix} -3 & 4 \\ 6 & 2 \end{bmatrix}$ find and b.

(ii) if A = $\begin{bmatrix} 2 & 3 \\ 1 & 0 \end{bmatrix}, B = \begin{bmatrix} 5 & -4 \\ -2 & -1 \end{bmatrix}$ $then\ find\ \frac{2}{3}(2A - 3B).$

(iii) if A = $\begin{bmatrix} 1 & 2 \\ 0 & 1 \end{bmatrix}$ $then\ verify\ that\ A - A^t$ is Skew symmetric. Find the product of $\begin{bmatrix} 8 & 5 \\ 6 & 4 \end{bmatrix} \begin{bmatrix} 2 & -\frac{5}{2} \\ -4 & 4 \end{bmatrix}$

(iv) Define singular and non singular matrix.

(v) Define Adjoint of a matrix.

(vi) Find Multiplicative inverse of A = $\begin{bmatrix} 1 & 2 \\ -3 & -5 \end{bmatrix}$.

(vii) Give rational number between $\frac{3}{4}$ and $\frac{5}{9}$.

(viii) Express the following recurring decimal as the rational number $\frac{P}{q}$ Where p, q are integer $0.\overline{67}$

(ix) a+b ∈ R $\forall\ a, v\ \in R\ this\ property\ is\ called.$

(a) Commutative property. (b) Closure property. (c) Associative property. (d) None of these.

Q.3 Note attempt any six parts. $2 \times 6 = 12$

Define symmetric property of equality of real No.

(ii) Simplify $\sqrt[5]{\frac{3}{32}}$

(iii) Simplify $5^{2^3} \div (5^2)^3$

(iv) Evaluate $(-i)^8$

(v) Express $\frac{275{,}000}{0.0025}$ in Scientific notation.

(vi) Express 9.018×10^{-6} in ordinary notation.

(vii) Find the value of x from the statement $log_{64} 8 = \frac{x}{2}$

(viii) Evaluate log 512 to the $2\sqrt{2}$

(ix) Express log x −2 log$x$+3 log (x+1) − log ($x^2 - 1$).

Q.4 Note attempt any six parts. $2 \times 6 = 12$

(i) Define polynomials.

(ii) Perform the indicated operation and simplify $\frac{1+2x}{1-2x} - \frac{1-2x}{1+2x}$

(iii) If a + b= 5, a – b = $\sqrt{17}$ then find value of a b

(iv) if x = $\sqrt{3} + 2$ find $x + \frac{1}{x}$

(v) if q = $\sqrt{5}$ + 2 find $q^2 - \frac{1}{q^2}$

(vi) Factorize $x^2 - y^2 - 4x - 2y + 3$

(vii) Factorize $x^4 + 4x^2 + 16$

(viii) Factorize $8x^3 - 125y^3 - 60x^2y + 150xy^2$.

(ix) For what value of m is a polynomial P(x) = $4x^3 - 7x^2 + 6x - 3m$ exactly divisible by $x + 2$?

Extensive Part. Note Attempt any 3 questions **8x3=24**

Q.5 (a) Solve the following statement by using matrix inverse method $2x - 2y = 4$; $3x + 2y = 6$

(b) if B= $\begin{bmatrix} 3 & -1 \\ 2 & -2 \end{bmatrix}$ **then** $B\ B^{-1} = I = B^{-1}\ B$

Q.6 (a) Simplify $\frac{2^{\frac{1}{3}} \times (27)^{\frac{1}{3}}\ \mathbf{x}\ (60)^{\frac{1}{2}}}{(180)^{\frac{1}{2}} \times (4)^{\frac{-1}{3}} \times (9)^{\frac{1}{4}}}$

(b) Solve the equation for real x and y $(3 + 4i)^2 - 2(x - yi) = x + yi$

Q.7 (a) Prove that $log_a n = log_b n \times log_a b$ OR $\frac{log_b n}{log_b a}$

(b) Use log tables to find value of $\sqrt[3]{\frac{0.7214 \times 20.37}{60.8}}$

Q.8 (a) Determine the rational numbers a and b if $\frac{\sqrt{3}-1}{\sqrt{3}+1} + \frac{\sqrt{3}+1}{\sqrt{3}-1} = a + b\sqrt{3}$

(b) Simplify $\frac{1}{a - \sqrt{a^2 - x^2}} - \frac{1}{a + \sqrt{a^2 - x^2}}$

Q.9 (a) The expression $lx^3 + mx^2 - 4$ **leaves remainder of** -3 **and 12 when divided by** $(x - 1)$ **and** $(x + 2)$
Respectively calculate value of l **and** m **.**

(b) Factorize $x^3 - x^2 - 22x + 40$ **cubic polynomial by factor Theorem.**