BALOCHISTAN BOARD OF INTERMEDIATE & SECONDARY EDUCATION, QUETTA

TIME: 3 HOURS

SSC (ANNUAL) EXAMINATION, 2023

MARKS: 75
PASS MARKS: 25

GROUP-I

SUBJECT: MATHEMATICS - 9TH

NOTE: Part-I is compulsory. Attempt 8 questions from Part-II, five questions from Part-III and 2 questions from part-IV. Simple Calculator and Logarithm table is allowed.

PART - I

Q.1 Choose the correct option. (12x1=12)

(I) A matrix in which number of rows and number of column are not equal is called a —— matrix.
(a) Rectangular (b) Diagonal (c) Scalar (d) Singular

(ii) The union of rational number and irrational number is called the set of —— number. (a) Prime (b) Complex (c) Logarithms (d) Real

(iii) The base of common logarithm is ——. (a) 5 (b) 10 (c) e (d) 100

(iv) $3\sqrt{5}$ is a surd of order —— (a) 5 (b) $\sqrt{5}$ (c) 3 (d) 1

(v) The factors of $2xy + xz + 2y^2 + yz$ are ——. (a) $(x+y)(2y+z)$ (b) $(2x+y)(2y+2z)$ (c) $(x^2+y^2)(x^2-y^2)$ (d) $(x+y)^2$

(vi) Square root of $x^2 - 10xy + 25y^2$ is —— (a) $\pm(x-10y)$ (b) $\pm(x-5y)$ (c) $\pm(x+5y)$ (d) $\pm(5x-y)$

(vii) A solution which is not verify the equation is called ——. (a) Absolute (b) Surds (c) Undefined (d) Linear

(viii) $P(6,0)$ lies on ——. (a) a-axis (b) b-axis (c) y-axis (d) x-axis

(ix) When a point lies on y-axis then its distance is equal to ——. (a) $y = d$ (b) $y + d$ (c) $y - d$ (d) $y' + d'$

(x) In a parallelogram opposite angles are ——. (a) Square (b) Congruent (c) Rectangular (d) mid point

(xi) —— triangles are of same size and shape. (a) Proportional (b) Median (c) Congruent (d) Concurrent

(xii) A quadrilateral having each angle equal to 90° and all the sides are congruent is called ——.
(a) Parallelogram (b) Rectangle (c) Trapezium (d) Square

PART - II

Q.2 Attempt any eight (8) questions. (8x3=24)

(I) If $A = \begin{bmatrix} 2 & 1 \\ 3 & 4 \end{bmatrix}$, $B = \begin{bmatrix} 1 & 0 \\ 3 & 1 \end{bmatrix}$ then find AB.
(II) Simplify $21(3a+b)^{11} \div 3(3a+b)^5$

(iii) Write the scientific notation the speed of a sound $1236 Km/h$ after converting into cm/h.

(iv) Simplify. $(\sqrt{3} - \sqrt{2})(\sqrt{6} - \sqrt{8})$
(v) Factorize. $a^2 + b^2 - 2cd - c^2 - d^2 + 2ab$

(vi) Find the H.C.F of $y^2 - 36$ and $y^2 - 10y + 24$ by factorization.
(vii) Solve the equation. $\sqrt[3]{2x-4} - 2 = 0$

(viii) Find the distance between two points $A(\sqrt{3}, 2)$ and $B(2\sqrt{3}, 5)$

(ix) If the sides of triangle are in a ratio 3:4:5 and the perimeter of the triangle is 36 miles what is the measure of each sides?

(x) Define Algebric expression and Surds.

PART - III

Attempt any five (5) questions. (5x5=25)

Q.3 Use matrix inversion method to find the solution set of the simultaneous equation $x + 5y = 4$
$x + 4y = 3$

Q.4 With the help of logarithm find the value of $\dfrac{(37.54)^{\frac{1}{3}} \times (38.4)^{\frac{1}{2}}}{(31.5)^{\frac{1}{5}}}$.

Q.5 If $P = \sqrt{2} - \sqrt{3}$ then find $P - \dfrac{1}{P}$ and $P^2 + \dfrac{1}{P^2}$

Q.6 Factorize. $x^3 + x + \dfrac{1}{3x} + \dfrac{1}{27x^3}$

Q.7 Find square root by division method. $x^2 + \dfrac{1}{x^2} + 4\left[x + \dfrac{1}{x}\right] + 6$

Q.8 Solve the absolute value equation. $\left|\dfrac{4x-2}{5}\right| = \left|\dfrac{6x+3}{2}\right|$

Q.9 Find the quotient $\dfrac{Z_1}{Z_2}$ where $Z_1 = 2 + 5i$ and $Z_2 = 3 + 8i$

Q.10 Find K if $x^3 + 3x^2 - Kx + 4$ leaves a remainder of 8 when divided by $x - 2$.

PART - IV

Attempt any two (2) questions. (2x7=14)

Q.11 Any point on bisector of angle is equidistant from its arms.

Q.12 If two sides of a triangle are unequal in length the longer side has an angle of a greater measure opposite to it.

Q.13 Prove that a quadrilateral is a parallelogram is its opposite sides are congruent.

Q.14 Construct $\triangle ABC$ such that $m\overline{AB} = 2.5cm$, $m\angle A = 40°$ and $m\angle B = 110°$

THE END