Zealous International School

Mid-Year Examination 2024-25

Grade: X

Name																				

(In Block Letters)

Date: _____ **Subject: - MATHS** **Time: 3 Hours** **T. Marks: 100**

Index No				

Instructions

Put your Name and Date at given place.

Read the paper thoroughly and answer those questions first for which you are sure about the answers.

Every question is with different instructions. Focus & follow it.

Don't need to write all the questions. You can put the Question no. put it correctly.

Re check the paper/ answer script after completion.

========== don't write under this line ==========

	SEGMENT A	SEGMENT B	SEGMENT C	Total
Question. No	Q1	Q2 to Q9	Q10 to Q13	
Total. No.	15	30	20	100
Marks Obtained				

Invigilated By _____ **Invigilator's Sign _____**

Checked By _____ **Checker's Sign _____**

Re Checked By _____ **Re Checker's Sign _____**

Objectives (MCQS) **15 Marks**

Section "A"

1. **10^0 = _____.**
   a) 1 **b) 100** **c) 600** **d) 11**
2. **The fourth proportional to 3,5,12 is = _____.**
   a) 20 **b) 15** **c) 60** **d) 36**
3. **If A = {1,2,3,4} and B = {2,4,6} then A ∆ B = _____.**
   a) {1,2} **b) {6}** **c) {1.3}** **d) {1.3.6}**
4. **In a proportion p:q::r:s is called_____.**
   a) First proportional **b) mean** **c) fourth proportional** **d) none**
5. **If m denotes the number of rows and n denotes the number of columns such m=n, then matrix s called _____ matrix.**
   a) Rectangular **b) Equal** **c) Square** **d) Null**
6. **The symbol of congruent of triangle is _____**
   a) ~ **b) ≠** **c) ≅** **d) =**
7. **The correct formula of mode A is_____.**
   a) (ad – bd) b) (bd – bd) c) (ad – bc) d) none
8. **The matrix inversion method is_____.**
   a) $X = A^{-1} B$ **b) $X = A^{-1}$** **c) $X = A^{-1} B^{-1}$** **d) all of these**
9. **_____ Triangles are always similar.**
   a) right **b) scalene** **c) equilateral** **d) acuter angle**
10. **In a right-angled triangle, the greatest angle is _____.**
    a) 100^0 b) 90^0 c)80^0 d) 70^0
11. **In a right-angled triangle hypotenuse is opposite side to.**
    a) Acute angle **b) right angle** **c) obtuse angle** **d) none**
12. **If a:4::15:5 then a = _____**
    a) 20 **b) 15** **c) 12** **d) 10**
13. **The diagonal of rectangle measure 6.5cm. if its width is 2.5cm, its length is**
    a) 9cm **b) 4cm** **c) 6cm** **d) 3cm**
14. **In a proportional, the product of means is equal to _____ of extremes.**
    a) Sum **b) difference** **c) quotient** **d) product**
15. **If A is any square matrix such that $A^t = -A$, then A is said to be.**
    a) Diagonal matrix **b) scalar matrix** **c) skew symmetric matrix** **d) symmetric matrix**

Subjective **60 Marks**

Section "B"

Note: Attempt and Three (06) questions. All question carries equal marks. (30)

Q2: If A = {1,2,3,4,6,8} and B = {2,4,6,8,10,11} then find a) A-B b) A ∩ B

Q3: If U = {1,2,3-------10,11,12.}, A = {1,3,5,7} B = {2,4,6,8} then find De Morgan's law's

Q4: $\frac{a^4b^2+a^2e^2-e^4f}{b^6+b^2f^2-f^5} = \frac{a^4}{b^4}$ **If a: b = c:d = e: f then show that.**

Q5: Let A = $\begin{bmatrix} 2 & 1 & 1 \\ 1 & 1 & 1 \\ 1 & -1 & 2 \end{bmatrix}$ **then compute M_{12}, M_{22}, M_{21}, A_{12}, A_{22}, A_{21}**

Q6: Prove that a: b = c: d if $\frac{a+b+c+d}{a+b-c-d} = \frac{a-b+c-d}{a-b-c+d}$

Q7: If $F \propto \frac{1}{r^2}$ **and f = 8 when r = 2 then find. a) F when r = 5 b. r when F = 24**

Q8: IF a: b = 5:8, find the value of 3a+4b: 5a+7b

Q9: Solve the following equation by using component and dividend theorem.

(i) $\frac{(x+3)^2-(x-5)^2}{(x+3)^2+(x-5)^2} = \frac{4}{5}$

Section "C"

Note: Attempt and Three (03) questions. All question carries equal marks. (30)

Q10: In a right-angled triangle, the square of the length of hypotenuse is equal to sum of the squares of the length of the other two sides. Given: triangle ABC is a right-angled triangle, having right angle at C. The measures of sides AB, AC, and BC, are c, b and a respectively. To Prove. $C^2 = a^2 + b^2$

Q11: The internal bisector of an angle of a triangle divides the sides opposite to it in the ratio of the side containing the angle.

Q12: Verify A (adj A) = |A| I, where A = $\begin{bmatrix} 2 & 3 \\ -4 & -6 \end{bmatrix}$

Q13: Find the solution by matrix inversion method or Cramer's rule.

(i) 2x – 4y = -12
2y + 3x = 0