



Oxford International School

Mid-Year Examination 2022-23

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(In Block Letters)

Date: _____

Subject: - Math's

Time: 2.5 Hours

T.

Marks: 75

Index No				
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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.

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Question No	Section A	Section B	Section c	T.MARKS
Total .No	15	36	24	75
Marks obtained				

Invigilated By _____

Invigilator's Sign

Checked By _____

Checker's Sign

Re Checked By _____

Re Checker's Sign

Section "A"	Objectives (MCQS)	Marks 15
1. $((A'))' =$	a) (A') b) $(A')'$ c) $(A)'$ d) A	
2. Ven diagram, _____ is used to represent universal set. =	a) rectangle b) circle c) oval d) all of these.	
3. π is a _____ number:	a) Irrational b) rational c) 10 d) none	
4. In a proportion $p:q::r:s$ is called _____.	a) First proportional b) mean c) fourth proportional d) none	
5. If $p:q = r:s$ then $p:r = q:s$ this property is called _____.	a) compodendo b) invertendo c) dividendo d) alternando	
6. Force and acceleration are in _____	a) direct proportion b) joint proportion c) inverse proportion d) none of these	
7. If A is any square matrix such that $A^t = -A$, then A is said to be: _____	a) Diagonal matrix b) Scalar matrix c) symmetric matrix d) skew symmetric matrix	
8. The correct formula of mode A is _____.	a) $(ad - bd)$ b) $(bd - bd)$ c) $(ad - bc)$ d) none	
9. The matrix inversion method is _____.	a) $X = A^{-1} B$ b) $X = A^{-1}$ c) $X = A^{-1} B^{-1}$ d) all of these.	
10. If p,q are the roots of $2x^2 + 5x - 3 = 0$, then $p+q =$ _____	a) $5/3$ b) $3/5$ c) $5/2$ d) $-5/2$	
11. If one root of quadratic equation is $2+\sqrt{3}$, then other root will be.	a) 2 b) $-2+\sqrt{3}$ c) $2-\sqrt{3}$ d) $-2-\sqrt{3}$	
12. The quadratic equation whose roots are complex cube roots.	a) $x^2 - x - 1 = 0$ b) $x^2 - x + 1 = 0$ c) $x^2 + x + 1 = 0$ d) $x^2 + x - 1 = 0$	
13. an improper fraction can be reduced into proper fraction by	a) addition b) multiplication c) subtraction d) division	

14. $\frac{x^3+1}{(x-1)(x+2)}$

a) Proper fraction b) An improper fraction c) An identity d) A constant term

15. The fraction $\frac{2x+5}{x^{2+5x+6}}$ is known as

a) Proper b) Improper c) Both a and b d) None of these.

Subjective

Marks 60

Section "B"

Q 2: Attempt and Nine (06) questions. All question carry equal marks (30)

1. If $A = \{1, 2, 3, 4, 5, 6\}$ and $B = \{2, 4, 6, 8, 10\}$ then find:

a. $A - B$ b. $A \cup B$

2. If $U = \{1, 2, 3, \dots, 10\}$, $A = \{1, 2, 3, 4, 5\}$ then find:

a. A' b. $A' \cup B'$

3. What number must be added to each term of the ratio 5:27 to make it equal 1:3?

4. if $a:b = 5:8$, find the value of $3a+4b:5a+7b$

5. Find the mean proportional to:

a. 8, 18 b. $5ab^2, 28a^3, b^2$

6. If $x:y = z:w$ then prove that.

$$\frac{4x+3y}{4x-3y} = \frac{4z+3w}{4z-3w}$$

7. Find the matrices $A = \begin{bmatrix} -1 & 0 & 1 \\ 2 & 1 & 0 \\ 3 & 2 & -1 \end{bmatrix}$ and $B = \begin{bmatrix} 4 & 2 & 3 \\ -2 & 4 & 1 \\ 3 & 2 & 1 \end{bmatrix}$

a. $A + B$ b. $A - B$

8. Evaluate each of the following determinants:

a. $\begin{vmatrix} -5 & -3 \\ 3 & -4 \end{vmatrix}$ b. $\begin{vmatrix} -1 & -5 \\ 2 & 3 \end{vmatrix}$

9. Find the value of x, the matrix $\begin{bmatrix} 5-x & x+1 \\ 2 & 4 \end{bmatrix}$ is singular?

10. Resolve the following into partial fractions:

a. $\frac{4(x-4)}{x^2-2x-3}$

11. Evaluate the following:

a. $(1+\omega^2)\zeta^4$

12. If y varies directly as x , and y = 10 when x = 3, find

(i) y in term of x (ii) y when x = 6 (iii) x when y = 15

Section "C"

Q3: Attempt and Three (03) questions. All question carry equal marks. (30)

1. Verify De Morgan's Law.

$A = \{1,3,5,7,9\}$, $B = \{5,6,7,8\}$ and $U = \{1,2,3,\dots,10\}$

2. 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} ,

3. Find the solution by matrix inversion method OR Cramer's rule:

a. $2x + 3y = 14$

$-4 + y = 28$

4. Solve the following system equations:

a. $2x - y = 3$ and $x^2 + y^2 = 2$

5. Resolve the following into partial fractions:

a. $\frac{4x-3}{(x+1)\zeta^2\zeta}$

6. If a: b = c: d = e: f then show that:

$$\frac{a^4b^2+a^2e^2-e^4f}{b^6+b^2f^2-f^5} = \frac{a^4}{b^4}$$