STEM SCHOOL
VIDYA NAGAR - GUNTUR
Affiliated to ICSE, New Delhi | Affiliation No : AP116

QUARTERLY EXAMINATION- 2026-2027
SUBJECT: MATHEMATICS
CLASS: X

DATE: 25-07-2026 **TIME: 3 HOURS**

NAME OF THE STUDENT & SEC: _____ **MAX MARKS: 80**

*Answers this Paper must be written on the paper provided separately. You will not be allowed to write during first **15 minutes**. This time is to be spent in reading the question paper. The time given at the head of this Paper is the time allowed for writing the answers. Attempt all questions from **Section A** and any four questions from **Section B**. All working, including rough work, must be clearly shown, and must be done on the same sheet as the rest of the answer. Omission of essential working will result in loss of marks. The intended marks for questions or parts of questions are given in brackets Mathematical tables are provided*

SECTION:A [40MARKS]
(Attempt **all** the questions from this section)

QUESTION:1

Choose the correct answers to the questions from the given options. **[15×1=15M]**

(Do not copy the questions, write the correct answers only)

1. Radha deposited ₹400 per month in a recurring deposit account for 18 months. The qualifying sum of money for the calculation of interest is
   a) ₹3600 b) ₹7200 c) ₹68400 d) ₹136800

2. If $x \in W$, then the solution set of the inequation $3x + 11 \geq x + 8$ is
   a) $\{-2, -1, 0, 1, 2, \ldots.\}$ b) $\{-1, 0, 1, 2, \ldots.\}$ c) $\{0, 1, 2, 3 \ldots.\}$ d) $\{x: x \in R, x \geq \frac{-3}{2}\}$

3. If the roots of the equation $x^2 - 6x + k = 0$ are real and distinct, then the value of k is
   a) > -9 b) > -6 c) < 6 d) < 9

4. If x,y,z are in continued proportion, then $(y^2 + z^2) : (x^2 + y^2)$ is equal to
   a) z : x b) x : z. c) zx d) (y+z) : (x+y)

5. The 15^{th} term from the last of A.P.7,10,13,.....130 is
   a) 49 b) 85 c) 88 d) 110

6. If (x-2) is a factor of $x^3 - kx - 12$, then the value of k is
   a) 3 b) 2 c) -2 d) -3

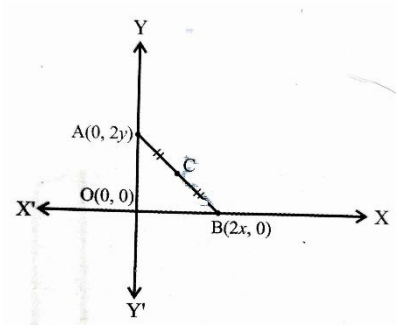
7. If A= $\begin{bmatrix} 2 & -1 \\ 2 & 0 \end{bmatrix}$ B = $\begin{bmatrix} -3 & 2 \\ 4 & 0 \end{bmatrix}$ and C = $\begin{bmatrix} 1 & 0 \\ 0 & 2 \end{bmatrix}$ then a matrix X such that A + X = 2B+C is

   a) $\begin{bmatrix} -7 & 5 \\ 6 & 2 \end{bmatrix}$ b) $\begin{bmatrix} 7 & -5 \\ 6 & 2 \end{bmatrix}$ c) $\begin{bmatrix} -7 & -5 \\ 2 & 6 \end{bmatrix}$ d) $\begin{bmatrix} -7 & 5 \\ 2 & 6 \end{bmatrix}$

8. Which term of the sequence in G.P 3,6,12, …… is 768?
   a) 10 b) 8 c) 9 d) None of these
9. Amit buys ₹20 shares of a company which pays 9% dividend at such a price that she gets a return of 12% on her investment. At what price did she buy each share?
   a) ₹ 20 b) ₹ 15 c) ₹ 25 d) ₹ 18
10. The point (3,0) is invariant under the reflection in
    a) The origin b) X- axis c) Y- axis d) Both X and Y-axes

11. The centroid of ΔABC is (6, 7). If the coordinates of the vertices A (a,5), B (7,9), C (5, 7). The value of a is
    a) 9 b) 6 c) 3 d) 7
12. The slope of the line whose inclination is 60^0 is _____

    a) $\frac{1}{\sqrt{3}}$ b) 1 c) -1 d) $\frac{-1}{\sqrt{3}}$
13. If the root of the quadratic equation $x^2 - px + 3 = 0, then\ p\ is\ equal\ to$
    a) 4 b) 3 c) 5 d) 2
14. $(x + 3), 1, (3x - 7)$ and -5 are in proportion. The value of x is :
    a) -1 b) 1 c) -5 d) 5
15. In the given diagram, ΔAOB is a right-angled triangle and C is the mid-point of AB. The coordinates of the point which is equidistant from the three vertices of $\Delta AOBis$:



a)(x,y) b) (y,x) c) $\left(\frac{x}{2}, \frac{y}{2}\right)$ d) $\left(\frac{2x}{3}, \frac{2y}{3}\right)$

QUESTION:2

i) The **fourth** and **seventh** terms of an Arithmetic progression **(A.P)**, are **60** and **114** respectively. Find the:
   a) First term and common difference.
   b) Sum of its first 10 terms. [4M]

ii) **A(-10,-2)** and **B(2,10)** are two end points of a line segment. If AB intersects the **X- axis** at P, find the:
   a) Ratio in which 'P' divides AB.
   b) Coordinates of point P. [4M]

iii) Given matrix A = $\begin{bmatrix} 3 & 1 \\ 5 & 3 \end{bmatrix}$ and B=$\begin{bmatrix} -1 & a \\ 3 & -5 \end{bmatrix}$ and the product AB= $\begin{bmatrix} b & 7 \\ 4 & 5 \end{bmatrix}$. Find the values of a and b. [4M]

QUESTION:3

i) Rekha opened a recurring deposit account for 20 months. The rate of interest is 9% per annum and Rekha receives ₹441 as interest at the time of maturity. Find the amount Rekha deposited each month. [4M]

ii) Solve the following inequation and represent your solution on the real number line:

$$2x - \frac{5}{3} < \frac{3x}{5} + 10 \leq \frac{4x}{5} + 11, x \in R$$ [4M]

iii) Use graph paper for this question. Take 2 cm = 1 unit along both X and Y-axes [5M]

ABCD is a quadrilateral whose vertices are A(2, 2), B(2, -2), C(0, -1) and D (0,1).

(i) Reflect quadrilateral ABCD on the Y-axis and name it as A'B'CD.
(ii) Write down the coordinates of A' and B'.
(iii) Name two points which are invariant under the above reflection.
(iv) Name the polygon A'B'CD.

SECTION: B [40MARKS]

(Attempt any **four** questions from this Section)

QUESTION:4

i) Salman deposits ₹1000 every month in a recurring deposit account for 2 years. If he receives ₹26000 on maturity, find: (*i*) the total interest Salman earns. (*ii*) the rate of interest. [3M]

ii) Given that x +2 and x + 3 are factors of $2x^3 + ax^2 + 7x - b$. *Determine the values of a and b*.[3M]

iii) Mohan Lal invested 29040 in 15%, ₹100 shares of a company quoted at a pre of 20%.

Calculate:

(*i*) the number of shares bought by Mohan Lal;

(ii) his annual income from shares;

(*iii*) the percentage return on his investment. [4M]

QUESTION:5

i) The 4th term of an A.P is 22 and 15th term is 66. Find the first term and the common difference. Hence, find the sum of the series to 8 terms. [3M]

ii) Given, matrix A = $\begin{bmatrix} 3 & -5 \\ -4 & 2 \end{bmatrix}$ and I is a unit matrix of order 2X2.

i) Find the matrix, A^2 and 5A

ii) Value of k, such that A^2 -5A= k.I [3M]

iii) Using factor theorem, factorise each of the following $2x^3 + 3x^2 - 9x - 10$ [4M]

QUESTION: 6

i) Calculate the ratio in which the line segment joining A(- 4, 2) and B(3, 6) is divided by the point P(x,3) Also, find (i) x (ii) length of AP.. [3M]

ii) Solve the following inequation and represent your solution on the real number line:

$-5\frac{1}{2} - x \leq \frac{1}{2} - 3x \leq 3\frac{1}{2} - x$, $x \in R$ [3M]

iii) Solve for x, using the properties of proportion $\frac{\sqrt{2x+3}+\sqrt{2x-3}}{\sqrt{2x+3}-\sqrt{2x-3}} = 3$ [4M]

QUESTION: 7

i) The 4th term of a G.P is 16 and the 7th term is 128. Find the first term and common ratio of the series. [3M]

ii) What least number must be added to each of the numbers 4, 6,8,11 in order to get the four numbers in proportion? [3M]

iii) A man covers a distance of 100 km, travelling with a uniform speed of x km/hr. Had the speed been 5 km/hr more, it would have taken 1 hour less. Find x the original speed. [4M]

QUESTION: 8

(i) Use a graph paper for this question. Take 2 cm = 1 unit along both the axes. [5M]

(ii) Plot the points A(0, 4), B(2, 2), C(5, 2) and D(4, 0). E(0, 0) is the origin.

(iii) Reflect B, C, D on the y-axis and name them as B', C' and D' respectively.

(iv) Join the points ABCD D' C' B' and A in order and give a geometrical name the closed figure.

v) a) Find a point P which divides internally the line segment joining the points A(-3,9) and B(1, -3) in the ratio 1 : 3.

b) Using Remainder Theorem, find the value of k if on dividing $2x^3 + 3x^2 - kx + 5$ by (x-2), leaves a remainder 7. [5M]

QUESTION: 9

i) Find the sum of 9 terms of the G.P $1, \frac{-1}{2}, \frac{1}{4}, \frac{-1}{8}, \ldots\ldots\ldots$ [3M]

ii) The sum of two numbers is 2 and the sum of their reciprocals is 2.25. find the numbers. [3M]

iii) Rekha opened a recurring deposit account for 20 months. The rate of interest is 9% per annum and Rekha receives ₹441 as interest at the time of maturity. Find the amount Rekha deposited each month. [4M]

QUESTION: 10

i) Katrina opened a recurring deposit account with a Nationalized Bank for a period of 2 years. If the bank pays interest at 6% per annum and the monthly installment is ₹1000, find:

(i) interest earned in 2 years

(ii) matured value. [3M]

ii) If $(k-3), (2k+1) and\ (4k+3) are\ three\ consecutive\ terms\ of\ an\ A.P,$ find the value of k. [3M]

iii) Rohit invested ₹9600 on ₹100 shares at ₹20 premium paying 8% dividend Rohit sold the shares when the price rose to ₹160 He invested the proceed (excluding dividend) in 10%, 50 shares at ₹40. Find the:

(i) original number of shares; (ii) sale proceeds;

(iii) new number of shares; (iv) change in the two dividends. [4M]

ALL THE BEST