

Roll No. _____

NLCS/09/Mathematics/91

Half Yearly Examination 2025 – 2026

Time - 3:00 Hrs.

M.M. 80

Section – A

Multiple choice Questions :

20x1=20

Q.1 Which of the following is an irrational number ?

- (a) $\frac{22}{7}$ (b) 3.1416 (c) $\sqrt{9}$ (d) $\sqrt{5}$

Q.2 The value of $11^{\frac{1}{2}} \div 11^{\frac{1}{4}}$ is :

- (a) $11^{\frac{1}{3}}$ (b) $11^{\frac{1}{2}}$ (c) $11^{\frac{3}{4}}$ (d) $11^{\frac{1}{4}}$

Q.3 The degree of the polynomial $p(x) = 5x^3 - 4x^2 + 7x - 12$ is :

- (a) 2 (b) 3 (c) 4 (d) 5

Q.4 Zero of the polynomial $p(x) = 2x + 5$ is :

- (a) $-\frac{2}{5}$ (b) $-\frac{5}{2}$ (c) $\frac{2}{5}$ (d) $\frac{5}{2}$

Q.5 Degree of the zero polynomial is :

- (a) 0 (b) 1 (c) any natural number (d) not defined

Q.6 A polynomial of degree 2 is called a :

- (a) linear polynomial (b) quadratic polynomial
(c) cubic polynomial (d) constant polynomial

Q.7 The distance of the point (3,4) from the x-axis is :

- (a) 3 units (b) 4 units (c) 5 units (d) 2 units

Q.8 The point (-7, -5) lies in which quadrant ?

- (a) I (b) II (c) III (d) IV

Q.9 If the co-ordinates of a point are (-3, 0), then it lies on the :

- (a) x-axis (b) y-axis (c) II-Quadrant (d) III-Quadrant

Q.10 The graph of the linear equation $y = -2$ is a line :

- (a) parallel to the x-axis (b) parallel to the y-axis
(c) passing through the origin (d) none of these

Q.11 Which of the following is a solution of the equation $2x - y = 4$?

- (a) (0, 4) (b) (2, 0) (c) (1, -2) (d) (-1, 6)

Q.12 A statement that is accepted as true without proof is called :

- (a) a theorem (b) a postulate (c) a definition (d) None of These

Q.13 Two distinct lines intersecting at a point can have :

- (a) only one point in common (b) only two points in common
(c) infinitely many points in common (d) No point in common

Q.14 If two supplementary angles are in the ratio 2 : 3 then the larger angle is

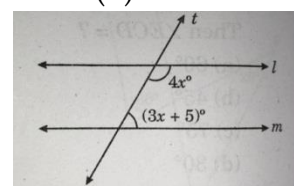
- (a) 72° (b) 108° (c) 90° (d) 54°

Q.15 In ΔABC , side BC is produced to D. If $\angle ABC = 40^\circ$ and $\angle ACD = 120^\circ$ then $\angle A = ?$

- (a) 60° (b) 40° (c) 80° (d) 50°

Q.16 For what values of x, we have $l \parallel m$?

- (a) $x = 35$ (b) $x = 30$ (c) $x = 25$ (d) $x = 20$



Q.17 The graph of equation $3x + 4y = 12$ intersects x - axis at :

- (a) (4, 0) (b) (0, 3) (c) (4, 3) (d) (0, 0)

Q.18 The perimeter of an equilateral triangle is 60 m. Find its area :

- (a) $50\sqrt{3} m^2$ (b) $75 m^2$ (c) $100\sqrt{3} m^2$ (d) $25\sqrt{3} m^2$

Q.19 Assertion (A) : $\sqrt{9}$ is an irrational number.

Reason (R) : Any number that cannot be expressed in the form $\frac{p}{q}$, where p and q are integers and $q \neq 0$, is an irrational number

- (a) Both A and R are true and R is the correct explanation of A
(b) Both A and R are true but R is not the correct explanation of A
(c) A is true but R is false
(d) A is false but R is true

Q.20 Assertion (A) : Heron's formula is applicable to all types of triangles

Reason (R) : Heron's formula only requires the lengths of the three sides which are always defined for any triangle.

- (a) Both (A) and (R) are true and R is the correct explanation of (A)
(b) Both (A) and (R) are true but R is not the correct explanation of (A)
(c) (A) is true but (R) is false
(d) (A) is false but (R) is true

Section - B

5x2=10

Q.21 The perimeter of an isosceles triangle is 100 cm. if the base measure 36 cm, find the area of the triangle.

Q.22 Represent $\sqrt{17}$ on the number line.

Q.23 If $a + b + c = 9$ and $ab + bc + ca = 26$ then find $a^2 + b^2 + c^2$

OR

Factorise : $27p^3 - \frac{1}{216} - \frac{9}{2}p^2 + \frac{1}{4}p$.

Q.24 Plot the given points on Cartesian plane.

- (i) (5, 3) (ii) (2, -3) (iii) (-6, 2) (iv) (-2, -5)

Q.25 If $x = 2a + 1$ and $y = a - 1$ is a solution of the equation $2x - 3y + 5 = 0$, find the value of a.

OR

Find any four different solutions of the linear equation : $2x + y = 7$

Section - C

6x3=18

Q.26 Express $0.\bar{3} + 0.\bar{4}$ in form of $\frac{p}{q}$.

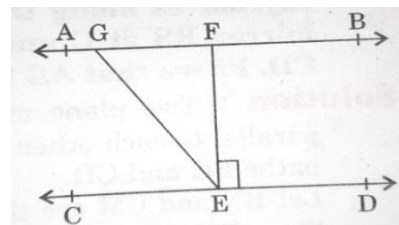
Q.27 Factorize the following cubic polynomial :

$$2x^3 - 3x^2 - 17x + 30$$

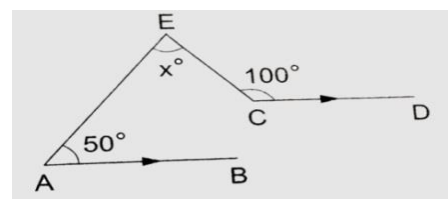
OR

Factorize : $2x^2 - \frac{5}{6}x + \frac{1}{12}$

Q.28 In the figure given below, if $AB \parallel CD$, $EF \perp CD$ and $\angle GED = 126^\circ$, find $\angle AGE$, $\angle GEF$ and $\angle FGE$.

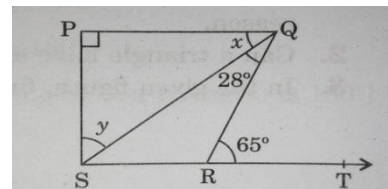


Q.29 In the given figure $AB \parallel CD$ and if $\angle ECD = 100^\circ$ and $\angle BAE = 50^\circ$, then find the value of $\angle AEC$.



OR

In the figure, if $PQ \perp PS$, $PQ \parallel SR$, $\angle SQR = 28^\circ$ and $\angle QRT = 65^\circ$, then find the value of x and y .

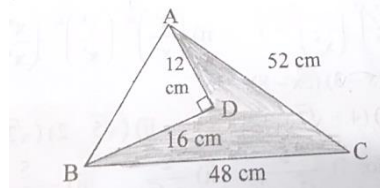


Q.30 Draw the graph of the linear equation $3x + 4y = 6$. At what points does the graph cut the x -axis and y -axis.

Q.31 The perimeter of a triangle is 480 meters and its sides are in the ratio of $1 : 2 : 3$. Find the area of the triangle ?

OR

Find the area of the shaded region in figure.



Section - D

4x5=20

Q.32 If each side of a triangle is doubled then find the ratio of the area of the new triangle thus formed and the given triangle.

OR

A park in the shape of a quadrilateral ABCD has $\angle C = 90^\circ$, $AB = 9\text{m}$, $BC = 12\text{m}$, $CD = 5\text{m}$ and $AD = 8\text{m}$. How much area does it occupy ?

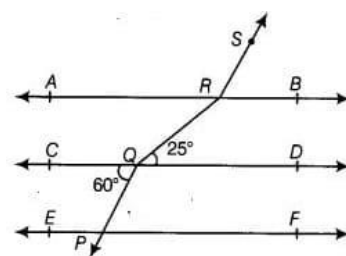
Q.33 If $x^{\frac{1}{3}} + y^{\frac{1}{3}} + z^{\frac{1}{3}} = 0$, then find the value of $(x + y + z)^3$.

OR

If $x = \frac{-1}{3}$ is a zero of the polynomial $p(x) = 27x^3 - ax^2 - x + 3$, then find the value of a .

Q.34 If a and b are rational numbers and $\frac{4+3\sqrt{5}}{4-3\sqrt{5}} = a + b\sqrt{5}$, find the value of a and b .

Q.35 In the given figure, if $AB \parallel CD \parallel EF$, $PQ \parallel RS$, $\angle RQD = 25^\circ$ and $\angle CQP = 60^\circ$ then find $\angle QRS$.

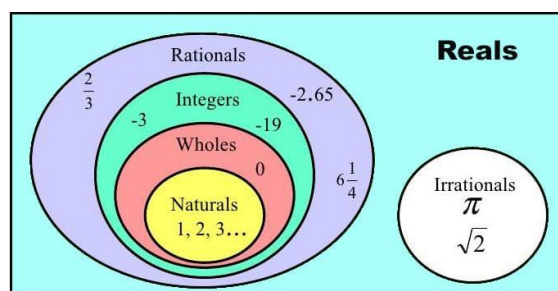


Section - E

4x3=12

CASE STUDY

Q.36 Real numbers are numbers which include both rational and irrational numbers. [Rational numbers are the numbers which can be expressed in p/q form where p & q are integers and q not equal to zero. irrational numbers are numbers which cannot be expressed as a ratio of two integers.]



(i) Every rational number is a

(a) whole number (b) natural number (c) integer (d) real number

(ii) The product of two irrational number is

(a) always rational (b) always irrational
(c) always integer (d) sometimes rational sometimes irrational

(iii) Between two rational numbers.

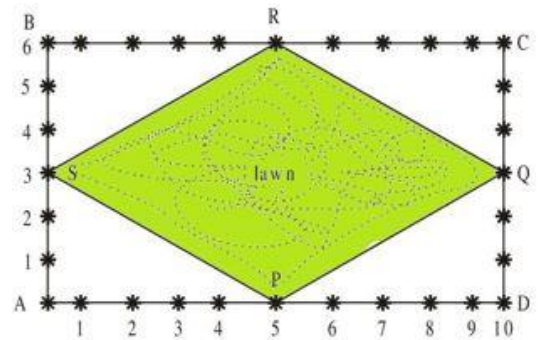
(a) there is no rational no. (b) there is exactly one rational no.

(c) infinitely many irrational numbers (d) no irrational number

(iv) Which of the following is an irrational number ?

(a) 3.14 (b) 3.141414..... (c) 3.14444..... (d) 3.1411411141.....

Q.37 The class IX students of a secondary school in Krishinagar have been allotted a rectangular plot of land for their gardening activity. Sapling of Gulmohar are planted on the boundary at a distance of 1m from each other. There is a lawn PQRS in the ground as shown in below figure.



(i) What are the coordinate of C, taking A as origin ?

(a) C (6, 10) (b) C (10, 10) (c) C (6, 6) (d) C (10, 6)

(ii) Side of lawn is :

(a) 4 units (b) $\sqrt{34}$ units (c) 34 units (d) none

(iii) Shape of lawn is :

(a) rectangle (b) square (c) parallelogram (d) rhombus

(iv) Area of lawn is

(a) 30 sq.units (b) 60 sq.units (c) 45 sq.units (d) none

Q.38 On his birthday, Manoj planned to celebrate. He bought 60 apples to give to children and adults working there.

Manoj gave 2 apples to each children and 3 apples to each adult along with birthday cake.

(i) How to represent the above situation in linear equation in two variables.

(a) $2x + y = 60$ (b) $2x + 3y = 60$ (c) $3x + 2y = 60$ (d) $3x + y = 60$

(ii) If the number of children is 15, then find the number of adults ?

(a) 10 (b) 15 (c) 25 (d) 20

(iii) Find the value of b, if $x = 5$, $y = 0$ is a solution of the equation $3x + 5y = b$.

(a) 12 (b) 15 (c) 14 (d) 18

(iv) If the number of adults is 12, then find the number of children ?

(a) 14 (b) 15 (c) 12 (d) 18
