OSDAV Public School, Kaithal
PT1, 2025
Class :IX
SUBJECT : MATHEMATICS

SET-A

Time: . **M.M. : 30**

General Instructions:-

I. All questions are compulsory.

Q.No.	Questions	Marks
1	A number is irrational number, if and only if its decimal representation is (A) non-terminating (B) non-terminating and repeating (C) non-terminating and non-repeating (D)terminating	1
2	Degree of the zero polynomial is (A 0 (B) 1 (C) any natural number (D) not defined	1
3	If (x +2) is a factor of $x^2 + mx + 14$, then the value of m is (A)7 (B)2 (C)9 (D)14	1
4	Which of the following is irrational? (A) $\sqrt{\frac{4}{9}}$ (B)$\sqrt{81}$ (C)$\sqrt{7}$ (D)$\sqrt{\frac{12}{3}}$	1
5	Assertion : The point P(0, 12) lies on y axis Reason : The ordinate of every point on x axis is zero (a) Both Assertion and Reason are correct and Reason is the correct explanation for Assertion **(b)** Both Assertion and Reason are correct but Reason is not the correct explanation for Assertion **(c)**Assertion is true but reason is false **(**d)Assertion is false but reason is true	1
6	Find two rational numbers between $\frac{1}{4}$ and $\frac{1}{5}$	2
7	Write any two Euclid's postulate.	2
8	Factorise : $125x^3 - 64y^3$	2
9	In which quadrant or on which axis following points lie A(2, -5), B(0, 2), C(-6, 8), D(-4, -5)?	2
10	Represent $\sqrt{2}$ on the number line.	2
11	Factorise: $x^3 + 2x^2 - 5x - 6$	3
12	Plot the following point on the Cartesian plane A(2,5), B(1, -2), C(-2, -5) D(-5,1), E(0,3),F(0,1).	3
13	Rationalise : $\frac{3}{5-\sqrt{3}} + \frac{2}{5+\sqrt{3}}$	3
14	Express $1.\overline{67}$ in the form $\frac{p}{q}$ where p and q are integers and q ≠ 0	3
15	Evaluate $(103)^3$ by the suitable identity	3

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SET-B

Time: . **M.M. : 30**

General Instructions:-

I. All questions are compulsory.

Q.No.	Questions	Marks
1	A number is rational number, if and only if its decimal representation is (A) non-terminating (B) terminating or non-terminating but repeating (C) terminating (D) non-terminating and non-repeating	**1**
2	Degree of the constant polynomial is (a) 0 (B) 1 (C) any natural number (D) not defined	**1**
3	If (x - 2) is a factor of $x^2 + mx + 14$, then the value of m is (A) 7 (B) -9 (C) 9 (D) 14	**1**
4	Which of the following is irrational? (A) $\sqrt{\frac{16}{9}}$ (B)$\sqrt{64}$ (C)$\sqrt{5}$ (D)$\sqrt{\frac{125}{5}}$	**1**
5	Assertion : The point P(3, 0) lies on x axis Reason : The ordinate of every point on x axis is zero (a) Both Assertion and Reason are correct and Reason is the correct explanation for Assertion (b) Both Assertion and Reason are correct but Reason is not the correct explanation for Assertion (c)Assertion is true but reason is false (d)Assertion is false but reason is true	**1**
6	Find two rational numbers between $\frac{1}{3}$ *and* $\frac{1}{7}$	**2**
7	Write any two Euclid's Axioms.	**2**
8	Factorise : $343x^3 - 27y^3$	**2**
9	In which quadrant or on which axis following points lie A(1, -5), B(0, 4), C(-5, 8), D(-1,-6)?	**2**
10	Represent $\sqrt{5}$ on the number line.	**2**
11	Factorise: $x^3 + 2x^2 - x - 2$	**3**
12	Plot the following point on the Cartesian plane A(4,7), B(2, -3), C(-3, -4) D(-6,5), E(4,0),F(0,5).	**3**
13	Rationalise : $\frac{3}{5-\sqrt{5}} + \frac{2}{5+\sqrt{5}}$	**3**
14	Express $1.\overline{39}$ in the form $\frac{p}{q}$ where p and q are integers and $q \neq 0$	**3**
15	Evaluate $(105)^3$ by the suitable identity.	**3**

Class- IX PT1 (2025)
Subject- Maths, set A M.M-30
Answer key with Marking scheme

Q1) (C) Non terminating and non-repeating (1)

Q2) (D) Not defined (1)

Q3) (A) 9 (1)

Q4) (C) $\sqrt{7}$ (1)

Q5) (C) Assertion is true, Reason is false (1)

Q6) $\frac{1}{4}$ Rational number between $\frac{1}{4}$ and $\frac{1}{5}$

$\frac{1}{4} = \frac{1}{4} \times \frac{5}{5} = \frac{5}{20}$, $\frac{1}{5} = \frac{1}{5} \times \frac{4}{4} = \frac{4}{20}$ (½)

$\frac{5}{20} \times \frac{4}{4} = \frac{20}{80}$, $\frac{4}{20} \times \frac{4}{4} = \frac{16}{80}$ (½)

Rational number b/w $\frac{16}{80}$ and $\frac{20}{80}$ are

$\frac{17}{80}$, $\frac{18}{80}$ ½, ½

Q7) $P(x) = kx^2 - kx + 1$

$x - 1 = 0$

$x = 1$, $(x-1)$ is factor so $P(1) = 0$ (½)

$P(x) = kx^2 - 2x + 1$ (½)

$P(1) = k(1)^2 - 2(1) + 1$

$0 = k - 2 + 1$ (½)

$0 = k - 1$

$0 + 1 = k$

$\boxed{1 = k}$ (½)

Q8) Factorise $125x^3 - 64y^3$

$= (5x)^3 - (4y)^3$ (½)

$= (5x - 4y)((5x)^2 + (4y)^2 + 5x \cdot 4y)$ (1)

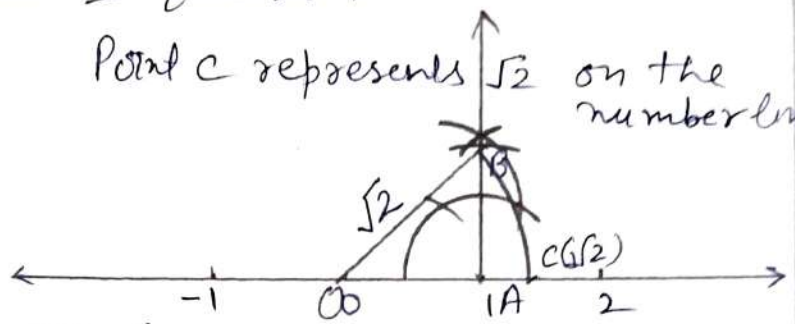
$= (5x - 4y)(25x^2 + 16y^2 + 20xy)$ (½)

Q9) A(2, -5) – IV quadrant
B(0, 2) – on +ve side of y-axis
C(-6, 8) – II quadrant
D(-4, -5) – III quadrant

$\frac{1}{2} \times 4 = 2$

Q10) $\sqrt{2} = \sqrt{1+1}$
$= \sqrt{1^2+1^2}$
$= \sqrt{B^2+P^2}$

Point C represents $\sqrt{2}$ on the number line



$(\frac{1}{2})$

$(1\frac{1}{2})$

Q11) $p(x) = x^3 + 2x^2 - 5x - 6$

Factors of constant term -6 are $\pm 1, \pm 2, \pm 3$ and ± 6

Put $x = -3$ in given polynomial $(\frac{1}{2})$

$P(-3) = (-3)^3 + 2(-3)^2 - 5(-3) - 6$
$= -27 + 2 \times 9 + 15 - 6$
$= -27 + 18 + 15 - 6$
$= -9 + 9$
$= 0$

$R = 0$, so $(x+3)$ is factor of given polynomial $(\frac{1}{2})$

$x+3 \overline{)x^3+2x^2-5x-6} \quad (x^2 - x - 2$
$x^3 + 3x^2$
$-x^2 - 5x - 6$
$-x^2 - 3x$
$-2x - 6$
$-2x - 6$
0

(1)

$x^2 - x - 2 = x^2 - 2x + 1x - 2$
$= x(x-2) + 1(x-2)$
$= (x-2)(x+1)$ $(\frac{1}{2})$

$\therefore x^3 + 2x^2 - 5x - 6 = (x+3)(x-2)(x+1)$ $(\frac{1}{2})$

Q12) For each right plotting on graph 6 pts. ($\frac{1}{2}$) ($\frac{1}{2} \times 6 = 3$)

Q13) Rationalise $\frac{3}{5-\sqrt{3}} + \frac{2}{5+\sqrt{3}}$

$$\frac{3}{5-\sqrt{3}} = \frac{3}{5-\sqrt{3}} \times \frac{5+\sqrt{3}}{5+\sqrt{3}} = \frac{15+3\sqrt{3}}{(5)^2-(\sqrt{3})^2}$$

$$= \frac{15+3\sqrt{3}}{25-3}$$

$$= \frac{15+3\sqrt{3}}{22} \quad (1)$$

$$\frac{2}{5+\sqrt{3}} = \frac{2}{5+\sqrt{3}} \times \frac{5-\sqrt{3}}{5-\sqrt{3}}$$

$$= \frac{10-2\sqrt{3}}{(5)^2-(\sqrt{3})^2}$$

$$= \frac{10-2\sqrt{3}}{25-3}$$

$$= \frac{10-2\sqrt{3}}{22} \quad (1)$$

$$\frac{3}{5-\sqrt{3}} + \frac{2}{5+\sqrt{3}} = \frac{15+3\sqrt{3}}{22} + \frac{10-2\sqrt{3}}{22}$$

$$= \frac{15+3\sqrt{3}+10-2\sqrt{3}}{22} \quad (1)$$

$$= \frac{25+\sqrt{3}}{22}$$

Q14) Let $x = 1.\overline{67}$ — (1) ($\frac{1}{2}$)

Multiply both sides by 100

$100x = 100 \times 1.\overline{67} = 167.\overline{67}$ — (2) (1)

Subtract Eq. (1) from Eq. (2)

$$100x = 167.\overline{67}$$
$$-x = -1.\overline{67}$$
$$99x = 166 \quad (1)$$
$$x = \frac{166}{99} \quad (\frac{1}{2})$$

8(5) $(103)^3 = (100+3)^3$ $(\frac{1}{2})$

By using Identity

$(a+b)^3 = a^3 + b^3 + 3ab(a+b)$

$(100+3)^3 = (100)^3 + (3)^3 + 3 \times 100 \times 3 (100+3)$ (1)

$= 1000000 + 9 + 900 (100+3)$

$= 1000000 + 9 + 90000 + 2700$ (1)

$= 1092727$ $(\frac{1}{2})$

Class IX PT, (2025)
Subject- Maths, set B M.M-30
Answer key with Marking Scheme

Q1) (B) Terminating or non terminating but Repeating (1)

Q2) A (0) (1)

Q3) (B) -9 (1)

Q4) (B) $\sqrt{5}$ (1)

Q5) (C) Assertion is true but Reason is false. (1)

Q6) Rational number between $\frac{1}{3}$ and $\frac{1}{7}$

$\frac{1}{3} = \frac{1}{3} \times \frac{7}{7} = \frac{7}{21}$ $\quad \frac{1}{7} = \frac{1}{7} \times \frac{3}{3} = \frac{3}{21}$ $\frac{1}{2}, \frac{1}{2}$

Two Rational number between $\frac{3}{21}$ and $\frac{7}{21}$

$= \frac{4}{21}, \frac{5}{21}$ $\frac{1}{2}, \frac{1}{2}$

Q7) $P(x) = x^2 - kx + 4$

$x - 2 = 0$ $(\frac{1}{2})$

$x = 2$

$x-2$ is a factor of given poly.

So $P(2) = 0$ $(\frac{1}{2})$

$P(x) = x^2 - kx + 4$

$P(2) = 2^2 - k(2) + 4$ $(\frac{1}{2})$

$0 = 4 - 2k + 4$

$0 = 8 - 2k$

$2k = 8$ $(\frac{1}{2})$

$k = \frac{8}{2} = 4$

8) Factorise $343x^3 - 27y^3$

$= (7x)^3 - (3y)^3$ $(\frac{1}{2})$

$= (7x-3y)((7x)^2 + (3y)^2 + 7x \cdot 3y)$ (1)

$= (7x-3y)(49x^2 + 9y^2 + 21xy)$ $\frac{1}{2}$

Q9) A(1,-5) – IV quadrant $(\frac{1}{2} \times 4)$

B(0, y) – on the positive side of y-axis $= 2$

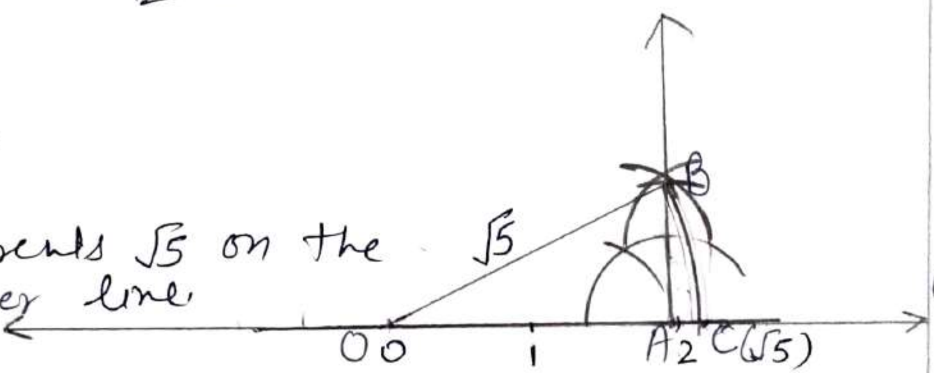
C(-5,8) – II Quadrant

D(-1,-6) – III Quadrant

Q10) $\sqrt{5} = \sqrt{4+1}$ $(\frac{1}{2})$

$= \sqrt{2^2+1^2}$

Pt. C represents $\sqrt{5}$ on the number line. $(1\frac{1}{2})$



Q11) Factorise $x^3 + 2x^2 - x - 2$

Factors of constant term are $\pm 1, \pm 2$

$P(x) = x^3 + 2x^2 - x - 2$, Put $x = 1$

$P(1) = (1)^3 + 2(1)^2 - 1 - 2$ $(\frac{1}{2})$

$= 1 + 2 - 1 - 1$

$P(1) = 0$

$R = 0$, so $(x-1)$ is factor of Poly. $x^3 + 2x^2 - x - 2$ $(\frac{1}{2})$

$$
\begin{array}{l}
x-1 \overline{)\, x^3 + 2x^2 - x - 2 \,} (x^2 + 3x + 2 \\
\quad\; \underline{x^3 - x^2} \\
\quad\;\; -\;+ \\
\qquad 3x^2 - x - 2 \\
\qquad \underline{3x^2 - 3x} \\
\qquad\;\; -\;+ \\
\qquad\qquad 2x - 2 \\
\qquad\qquad \underline{2x - 2} \\
\qquad\qquad\; -\;+ \\
\qquad\qquad\quad 0
\end{array}
$$

(1)

$x^2+3x+2 = x^2+2x+1x+2$

$= x(x+2)+1(x+2)$ $(\frac{1}{2})$

$= (x+2)(x+1)$ $(\frac{1}{2})$

$x^3+2x^2-x-2 = (x-2)(x+2)(x+1)$

12) For each right plotting on graph $(\frac{1}{2})$

6 pts $\frac{1}{2}\times 6 = 3$

13) $\frac{3}{5-\sqrt{5}} + \frac{2}{5+\sqrt{5}}$

$\frac{3}{5-\sqrt{5}} = \frac{3}{5-\sqrt{5}} \times \frac{5+\sqrt{5}}{5+\sqrt{5}} = \frac{15+3\sqrt{5}}{5^2-(\sqrt{5})^2}$

$= \frac{15+3\sqrt{5}}{25-5}$

$= \frac{15+3\sqrt{5}}{20}$ (1)

$\frac{2}{5+\sqrt{5}} = \frac{2}{5+\sqrt{5}} \times \frac{5-\sqrt{5}}{5-\sqrt{5}}$

$= \frac{10-2\sqrt{5}}{(5)^2-(\sqrt{5})^2}$

$= \frac{10-2\sqrt{5}}{25-5}$

$= \frac{10-2\sqrt{5}}{20}$ (1)

$\frac{3}{5-\sqrt{5}} + \frac{2}{5+\sqrt{5}} = \frac{15+3\sqrt{5}}{20} + \frac{10-2\sqrt{5}}{20}$

$= \frac{15+3\sqrt{5}+10-2\sqrt{5}}{20}$

$= \frac{25+\sqrt{5}}{20}$ (1)

Q14) Let $x = 1.\overline{39}$ ——— (1) (½)

Multiply both sides by 100

$100x = 100 \times 1.\overline{39}$ (1)

$100x = 139.\overline{39}$ ——— (2)

Sub. Eq. (1) from Eq. (2)

$100x = 139.\overline{39}$

$-\ x = -\ 1.\overline{39}$ (1)

$99x = 138$

$x = \frac{138}{99}^{46}_{33}$ (½)

$x = \frac{46}{33}$

Q15) $(105)^3 = (100+5)^3$ (½)

By using Identity

$(a+b)^3 = a^3 + b^3 + 3ab(a+b)$ (1)

$(100+5)^3 = (100)^3 + (5)^3 + 3 \cdot 100 \cdot 5(100+5)$

$= 1000000 + 125 + 1500(100+5)$

$= 1000000 + 125 + 150000 + 7500$ (1)

$= 1157625$ (½)