

STD : IX

DATE : 02.8.2023

FIRST UNIT TEST - AUGUST 2023  
SUBJECT - ALGEBRA

MARKS : 40  
TIME : 2HRS

[4]

Q1 A. Choose the correct alternative.

1.  $A \cup A' = \dots$

- (A)  $\emptyset$  (B)  $U$  (C)  $A$  (D)  $A'$

2 Which of the following is a rational number.

- (A)  $\sqrt{7}$  (B)  $\sqrt{25}$  (C)  $\frac{\sqrt{25}}{5}$  (D)  $\frac{\sqrt{7}}{2}$

3  $Q = \{x | x = 2^n, n \in I\}$ .  $Q$  is .....

- (A) An empty set (B) an infinite set (C) a finite set (D) singleton set

4 What is the conjugate pair of  $2\sqrt{5} - 5\sqrt{2}$  ?

- (A)  $2\sqrt{5} + 5\sqrt{2}$  (B)  $5\sqrt{2} - 2\sqrt{5}$  (C)  $5\sqrt{5} - 2\sqrt{2}$  (D)  $2\sqrt{5} - 5\sqrt{2}$

[4]

B. SOLVE THE FOLLOWING.

1 If  $A = \{1, 3, 5\}$  write any three subsets of set  $A$ .

2 Simplify  $7\sqrt{3} + 29\sqrt{3}$

3 Decide which of the following are equal sets and which are not? Justify your answer.

$A = \{x | 3x - 1 = 2\}$

$B = \{x | x \text{ is a natural number, but } x \text{ is neither prime nor composite.}\}$

$C = \{x | x \in N, x < 2\}$  <https://www.maharashtrastudy.com>

4 State the order of the surd.

- (i)  $\sqrt[3]{18}$  (ii)  $5\sqrt{12}$

Q2 A. Complete the activity (any 2)

[4]

1 Write the following sets using listing method and classify into finite or infinite set.

(i)  $A = \{x | x \in N \text{ and } x \text{ is an odd number}\}$  (ii)  $B = \{x | x \in N \text{ and } 3x - 1 = 0\}$

(iii)  $C = \{x | x \in N \text{ and } x \text{ is divisible by } 7\}$  (iv)  $D = \{(a, b) | a, b \in W, a + b = 9\}$

2 If  $A = \{a, b, c, d, e\}$ ,  $B = \{c, d, e, f\}$ ,  $C = \{b, d\}$ ,  $D = \{a, e\}$ . Then which of the following statements

are true and which are false?

(i)  $C \subseteq B$  (ii)  $A \subseteq D$  (iii)  $D \subseteq B$  (iv)  $D \subseteq A$

3. Write any three rational numbers between 0.3 and -0.5

**B. Solve the following (any 4)**

(8)

- Write the following sets using Rule method.
  - $A = \{1, 4, 9, 16, 25, 36, 49, 64, 81, 100\}$
  - $D = \{\text{Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday}\}$
- Convert rational number  $0.\bar{6}$  into p/q form.
- Write the following rational number in decimal form (i)  $25/99$
- Solve  $|3x-5|=1$ .
- Compare the following pair of surds:  $4\sqrt{42}, 9\sqrt{2}$

**Q3.A. Solve the following. (any 1)**

(3)

- Multiply  $(3\sqrt{2} - \sqrt{3})(4\sqrt{3} - \sqrt{2})$
- In a class, 8 students out of 28 have only dog as their pet animal at home, 6 students have only cat as their pet animal. 10 students have dog and cat both, then how many students do not have a dog or cat as their pet animal at home.

**B. Solve the following (Any 2)**

(6)

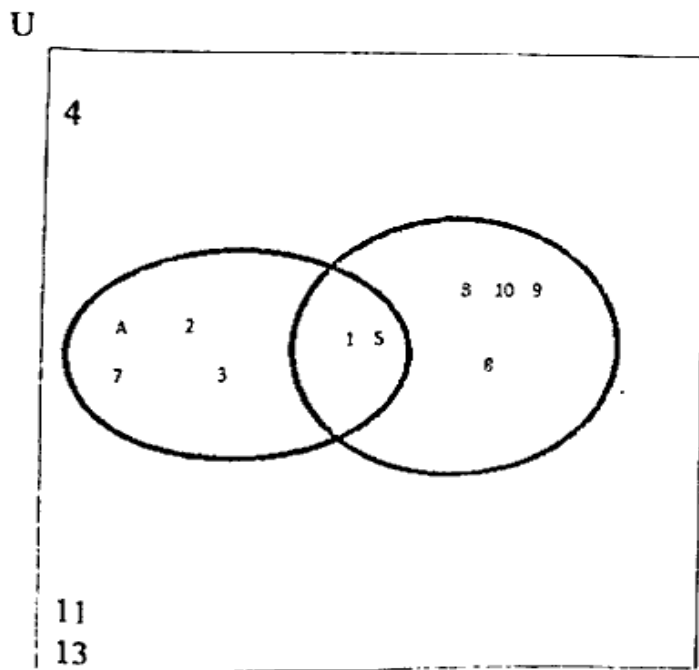
- Classify the given pair into like surds and unlike surds.

(i)  $\sqrt{52}, 5\sqrt{13}$

(ii)  $\sqrt{68}, 5\sqrt{3}$

(iii)  $4\sqrt{18}, 7\sqrt{2}$

- Observe the venn diagram and write the given set U, A, A', B, A  $\cup$  B, and A  $\cap$  B,



- Write with reasons, which of the following sets are finite or infinite.

- (i)  $A = \{x | x < 10, x \text{ is a natural number}\}$
- (ii)  $B = \{y | y < -1, y \text{ is an integer}\}$
- (iii)  $C =$  Set of students of class 9 from your school.
- (iv) set of people from your village.
- (v) set of apparatus in laboratory
- (vi) set of rational numbers

Q4. Solve the following (any 2)

(6)

1. Convert  $127/200$  into its decimal form.
2. In a class of 70 students, 45 students like to play cricket. 52 students like to play kho-kho. All the students like to play at least one of the two games. How many students like to play cricket and kho-kho? how many students like to play only cricket? Also show the above information using venn diagram?
3. Prove that  $3 + \sqrt{5}$  is an irrational number?

Q5. Solve the following (Any 1)

(5)

1. Rationalize the denominator  $\frac{\sqrt{5}-\sqrt{3}}{\sqrt{5}+\sqrt{3}}$
2. Fill in the blanks given in the following table.

LISTING METHOD	RULE METHOD
$A = \{2, 4, 6, 8, 10, 12, 14\}$	$A = \{x   x \text{ is an even natural number less than } 15\}$
-----	$B = \{x   x \text{ is a perfect square number between } 1 \text{ to } 20. \text{ https://www.maharashtrastudy.com}\}$
$C = \{a, e, i, o, u\}$	-----
-----	$D = \{y   y \text{ is a colour in the rainbow}\}$
-----	$P = \{x   x \text{ is an integer and, } -3 < x < 3\}$
$M = \{1, 8, 27, 64, 125\}$	-----

\*\*\*\*\* BEST OF LUCK\*\*\*\*\*

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