

Instructions -

- 1) All questions are compulsory.
- 2) Use of calculator is not allowed.
- 3) The numbers to the right side of the questions indicate full marks.
- 4) Assessment will be done for the first attempted answer to MCQ (Q.1.A)
- 5) For every MCQ, four alternatives (A, B, C, D) of answers are given. Alphabet of correct answer is to be written in front of the subquestion number.

Q.1 A) Choose the correct answer and write the alphabet of it in front of the subquestion number.

4

1) Which of the following set represent $W \cup N$?

A) $\{0, 1, 2, 3, \dots\}$

B) $\{1, 2, 3, \dots\}$

C) $\{0\}$

D) $\{\}$

2) Write the order of the surd $\sqrt[3]{\sqrt{17}}$

A) 5

B) 6

C) 2

D) 3

3) Which of the following is a linear polynomial?

A) $(m^3 + 7)$

B) $(m^2 + 7)$

C) $(m + 7)$

D) $(m^4 + 7)$

4) Which of the following is an irrational number?

A) 0.17

B) $1.\overline{513}$

C) $0.27\overline{46}$

D) 0.101001000....

B) Solve the following subquestions.

4

1) Write the following set in Rule method.

$$D = \{P, R, A, D, N, Y\}$$

2) Find the value of $|7| \times |-4|$

3) Write the polynomial $(-2, 2, -2, 2)$ in index form by using x as a variable

4) Write the degree of the polynomial $m^3 n^7 - 3m^5 n + mn$

.....2

Q.2 A) Complete any two activities of the following.

4

$$\begin{aligned}
 1) \text{ Multiply: } & \sqrt{2} (\sqrt{8} + \sqrt{18}) \\
 &= \sqrt{2 \times 8} + \boxed{\sqrt{\quad \times 18}} \\
 &= \boxed{\sqrt{\quad}} + \sqrt{36} \\
 &= 4 + \boxed{\quad} \\
 &= \boxed{\quad}
 \end{aligned}$$

2) Subtract the second polynomial from the first.

$$\begin{aligned}
 (x^2 + 9x + \sqrt{3}) - (7x^2 - 19x + \sqrt{3}) &= x^2 - 9x + \sqrt{3} - 7x^2 + \boxed{\quad} - \sqrt{3} \\
 &= (x^2 - 7x^2) - \boxed{\quad + 19x} + \sqrt{3} - \boxed{\quad} = \boxed{\quad} + 10x
 \end{aligned}$$

$$\begin{aligned}
 3) \text{ If } P = \{1, 2, 3, 4, 5\} \text{ and } D = \{3, 4, 7, 8\} \text{ then } P \cup D &= \{\boxed{\quad}\} \\
 n(P) + n(D) &= \boxed{\quad}; P \cap D = \{\boxed{\quad}\}, n(P \cap D) = \boxed{\quad}
 \end{aligned}$$

B) Solve any four subquestions of the following.

8

1) If $A = \{3, 4, 5, 7\}$ and $B = \{1, 4, 8\}$ then show $A \cap B$ by Venn diagram.

2) State whether the given algebraic expression $(\sqrt{y} + 5)$ is a polynomial? Justify.

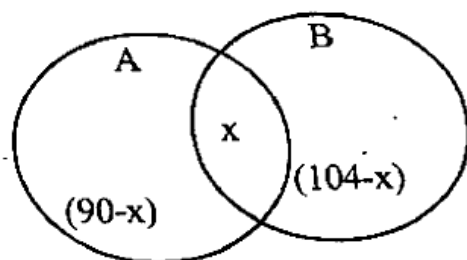
3) Multiply: $(\sqrt{5} - \sqrt{7}) \sqrt{2}$

4) If $P(x) = 2x^2 - x^3 + x + 2$ then find $P(0)$.

.....3

Q.2 B)

- 5) From the Venndiagram. Find the value of X by using correct formula.



Q.3 A) Complete any one activity of the following.

3

- 1) Express the recurring decimal $30.\overline{219}$ in $\frac{P}{q}$ form.

Let $x = 30.\overline{219}$ ——— (I) $\therefore x = 30.\overline{219}$

(multiplying both sides by 1000 of equation (I))

$$\therefore \boxed{} x = 30.219.\overline{219} \text{ ——— (II)}$$

$$\therefore \boxed{} - x = \boxed{} - 30.\overline{219}$$

$$\therefore \boxed{} = 30189 ; \therefore x = \frac{30189}{\boxed{}} ;$$

$$30.\overline{219} = \boxed{\begin{array}{c} \dots\dots \\ \hline \dots\dots \end{array}}$$

- 2) Divide : $(y^4 - 5y^2 - 4y) \div (y + 3)$ by synthetic division
divisor = $(y + 3)$

- 3	1	$\boxed{}$	- 5	- 4	0
	↓	- 3	9	$\boxed{}$	48
	$\boxed{}$	- 3	4	- 16	$\boxed{}$ ← Remainder

Quotient = $\boxed{}$; Remainder = $\boxed{}$

Q.3 B) Solve any two subquestions of the following.**6**1) If M is any set then write $M \cup \phi$ and $M \cap \phi$.

(Note take a proper example.)

2) Rationalize the denominator. $\frac{8}{3\sqrt{2} + \sqrt{5}}$ 3) If $P(x) = 5x + 2$ then find $P(2) + P(-2)$.4) If $C = \{x \mid 5x - 2 = 0, x \in N\}$ then find the value of x . Also write set 'C' by using listing method and state the type of set 'C'.**Q.4 Solve any two subquestions of the following.****8**

1) 140 trees were planted by Dinkar and 180 trees were planted by Pradnya on the occasion of Tree Plantation Week. Out of these 50 trees were planted by both of them together. How many trees were planted by Pradnya or Dinkar?

2) Show the numbers $-\sqrt{2}$ and $\sqrt{10}$ on number line by taking scale 1 cm = 1 unit.3) Factorise : $(x^2 - 2x + 3)(x^2 - 2x + 5) - 35$ **Q.5 Solve any one subquestion of the following.****3**1) In April 2021, the population of villages A, B, C is $5x^2 - 3y^2$, $3y^2 + 7xy$ and $8x^2 + 5xy$ respectively. At the beginning of April 2022, $3x^2 + 2xy - 3y^2$, $7xy$ and $4x^2 + 5xy$ persons from each of the villages respectively went to another village for education then what is the remaining total population of these three villages?

2) Find the square root of 5 up to three decimal place by using division method.