



Dnyansagar Coaching Classes, A'nagar

First Term Exam

Std. 9th (Semi)

Sub-Algebra

Lesson - 1 to 4

Time - 2.30 hrs

Max Marks - 60

Q.1 A) Solve the following. (6/8) 12

- 1) Identify the linear equations in two variables.
 - i) $3x - 2y = 15$
 - ii) $6x + 3y = 6xy$
- 2) Write the set in builder form
 $A = \{I, N, D, A\}$
- 3) Solve $|x - 3| = 5$
- 4) Add the polynomials and write the degree of polynomial obtained.
 $4x^2 + 5x^3 + 7x$ and $4x^3 - 3x^2 + 5$
- 5) State which of the following are surds. Justify.
 - i) $\sqrt[3]{0.16}$
 - ii) $\sqrt{-5}$
- 6) Write conjugate pair of given surd
 - i) $\sqrt{5} - 2\sqrt{2}$
 - ii) $\sqrt{6} + \sqrt{5} - \sqrt{11}$
- 7) Find the product of $\sqrt[3]{3} \times \sqrt{3} \times \sqrt[3]{2}$
- 8) If $X = \{1, 2, 3\}$. Write two subsets of X.

Q.2 Solve the following. (4/6) 12

- 1) Find square root of $8 + 2\sqrt{15}$
- 2) If $A = \{1, 2, 3, 4\}$, $B = \{4, 5, 6\}$, $C = \{1, 3, 5\}$ find i) $A \cap B$ ii) $B - C$ iii) $C - A$
- 3) Express given surds as pure surd.
 - i) $3\sqrt{6}$
 - ii) $5\sqrt[3]{5}$
 - iii) $2\sqrt[3]{7}$
- 4) Factorise -
 $a^3 - b^3 + 8c^3 + 6abc$
- 5) Show $\sqrt{3}$, $\sqrt{5}$, $\sqrt{7}$ on the number line.
- 6) Find value of $(x + y)$ and $(x - y)$ from examples without solving for x and y.
 $5x + 7y = 17$; $7x + 5y = 19$

Q.3 Solve the following. (4/6) 16

- 1) Rationalise the denominator $\frac{2\sqrt{8}}{2\sqrt{5} - \sqrt{3}}$
- 2) Factorise the following.
 - i) $x^2 + xy - 3x - 3y$
 - ii) $8x^3 + 125y^3$
- 3) Divide the first polynomial by the second polynomial and express as Dividend = Divisor x Quotient + Remainder.
 $y^3 - 6y^2 + 6y + 1$; $y - 1$
- 4) Solve the equations by substitution method.
 $2x + 3y = -4$; $x - 5y = 11$
- 5) Draw a Venn - diagram showing subset relations of the following sets.
 $A = \{2, 4\}$, $B = \{x/x = 2^n, n < 5, n \in \mathbb{N}\}$, $C = \{x/x \text{ is an even natural number } \leq 16\}$
- 6) Solve
 - i) $27\sqrt[3]{18} \div 3\sqrt[3]{9}$
 - ii) $\sqrt[3]{3} \times \sqrt[4]{2}$

Q.4 Solve the following. (4/6)

- 1) Express the following polynomial in the index form taking x as a variable.
- $(-2, 0, 3, -5, 6)$
 - $(1, 0, 0, 0, 0, 0, 64)$
 - $(1, 0, -3, 1, 5)$
 - $(2, 0, 0, -4)$
 - $(1, 0, 0, 343)$
- 2) 110 children choose their favourite colour from blue and pink. Every student has to choose at least one of the colour. 60 children choose blue colour while, 70 children choose pink colour. How many children choose both the colours as their favourite colour?
- 3) Use synthetic division for performing the following division. Write the result in the form.
 Dividend = Divisor \times Quotient + Remainder
 $(x^5 + x^3 + x^2 - 2x + 4) \div (x + 3)$
- 4) State the order of the following.
- $\sqrt[4]{29}$
 - $ab^2cd - 3a^2bcd^3 + 2ac^4$
 - $\sqrt[7]{4^3}$
 - $x^9 - x^4 + x^{12} + x = 2$
 - $\sqrt{101}$
- 5) Solve by using two variables.
 Two numbers are in the ratio 3:4. If 4 is added to each, the ratio becomes 4 : 5 find the numbers.
- 6) If $\frac{\sqrt{3}-1}{\sqrt{3}+1} = a + b\sqrt{3}$ find the values of a and b .

