

Model Question Paper

Algebra - Part V

10th Standard

Maths

Reg.No. :

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I. Answer all the questions.

II. Use Blue pen only.

Time : 01:00:00 Hrs

Total Marks : 50

5 x 1 = 5

Section-A

- 1) A quadratic equation whose one root is 3 is
(a) $x^2 - 6x - 5 = 0$ (b) $x^2 + 6x - 5 = 0$ (c) $x^2 - 5x - 6 = 0$ (d) $x^2 - 5x + 6 = 0$
- 2) The common root of the equations $x^2 + bx + c = 0$ and $x^2 + bx - a = 0$ is
(a) $\frac{c+a}{2b}$ (b) $\frac{c-a}{2b}$ (c) $\frac{c+b}{2a}$ (d) $\frac{a+b}{2c}$
- 3) If α, β are the roots of $ax^2 + bx + c = 0$ $a \neq 0$, then the wrong statement is
(a) $\alpha^2 + \beta^2 = \frac{b^2 - 2ac}{a^2}$ (b) $\alpha\beta = \frac{c}{a}$ (c) $\alpha + \beta = \frac{b}{a}$ (d) $\frac{1}{\alpha} + \frac{1}{\beta} = \frac{b}{c}$
- 4) If α and β are the roots of $ax^2 + bx + c = 0$, then one of the quadratic equations whose roots are $\frac{1}{\alpha}$ and $\frac{1}{\beta}$, is
(a) $ax^2 + bx + c = 0$ (b) $bx^2 + ax + c = 0$ (c) $cx^2 + bx + a = 0$ (d) $cx^2 + ax + b = 0$
- 5) Let $b = a + c$. Then the equation $ax^2 + bx + c = 0$ has equal roots, if
(a) $a = c$ (b) $a = -c$ (c) $a = 2c$ (d) $a = -2c$

Section-B

- 6) Simplify the following as a quotient of two polynomials in the simplest form. $\frac{2x^2 - 5x + 3}{x^2 - 3x + 2} - \frac{2x^2 - 7x - 4}{2x^2 - 3x - 2}$
- 7) Find the square root of the following $289(a - b)^4(b - c)^6$
- 8) Find the square root of the following $(x + 11)^2 - 44x$
- 9) Find the square root of the following $(x - y)^2 + 4xy$
- 10) Find the square root of the following $121x^8y^6 \div 81x^4y^8$
- 11) Find the square root of the following: $4x^2 + 9y^2 + 25z^2 - 12xy + 30yz - 20zx$
- 12) Find the square root of the following: $x^4 + \frac{1}{x^4} + 2$
- 13) Solve the following quadratic equations using quadratic formula. $15x^2 - 11x + 2 = 0$
- 14) Solve the following quadratic equations using quadratic formula. $x + \frac{1}{x} = 2\frac{1}{2}$
- 15) Solve the following quadratic equations using quadratic formula. $3a^2x^2 - abx - 2b^2 = 0$

10 x 2 = 20

Section-C

- 16) If α and β are the roots of the equation $3x^2 - 6x + 1 = 0$, form an equation whose roots are $2\alpha + \beta, 2\beta + \alpha$
- 17) If α and β are the roots of the equation $2x^2 - 3x - 1 = 0$, find the values of $\alpha^4 + \beta^4$
- 18) If α and β are the roots of the equation $2x^2 - 3x - 1 = 0$, find the values of $\frac{\alpha^3}{\beta} + \frac{\beta^3}{\alpha}$
- 19) Determine the nature of roots of the following quadratic equations $2x^2 + 5x + 5 = 0$
- 20) Multiply $\frac{x^3 - 8}{x^2 - 4}$ by $\frac{x^2 + 6x + 8}{x^2 + 2x + 4}$

5 x 5 = 25
