Batch Garud & Brahmos, Mathematics EPS V (Quadratic Equation)

Student's Name- **Duration-1 Hr** **Date-06-07-2020**

1. If the roots of ax^2 + bx + c = 0 (a>0), be each greater than unity, then what is the condition?
(a) a + b + c > 0 (b) a + b + c < 0
(c) a + b + c = 0 (d) None of these

2. If sin α and cos α are the roots of the equation px^2 + qx + r = 0, then $p^2 - q^2$ + 2pr =
(a) 1 (b) – 1 (c) 0 (d) 2

3. The number of real solution of $|x|^2 - 5|x|$+ 6 = 0 is
(a) 2 (b) 4 (c) 3 (d) 5

4. The condition that one root of the equation ax^2 + bx + c = 0 may be double of the other, is
(a) $9a^2$ = 2bc (b) $2c^2$ = 9ab
(c) $2b^2$ = 9ac (d) $9b^2$ = 2ac

5. The roots of the equations $4^x - 3.2^{x+2}$+ 32 = 0 are
(a) 1, 2 (b) 2, 5
(c) 1, 3 (d) 2, 3

6. The number of roots of the equation $2sin^2\theta$+3 sin θ + 1 = 0 in (0, 2π) is
(a) 1 (b) 2 (c) 4 (d) 3

7. The maximum and minimum value of $\frac{x^2-x+1}{x^2+x+1}$ for real x is
(a) maximum is 5, minimum is 1/5.
(b) maximum is 3, minimum is 1/3.
(c) maximum is 2, minimum is ½.
(d) none of these.

8. The value of k so that the equation $2x^2$ + kx- 5 = 0 and $x^2 - 3x - 4 = 0$ have one root in common is
(a) – 3 or -27/4 (b) -3 or 27/4
(c) 3 or 27/4 (d) 3 or -27/4

9. The number of real solution $|x|^2 - 3|x|$-4 = 0 is
(a) 1 (2) 3 (c) 2 (d) 4

10. If a, b, c ϵ R and a + b + c = 0, then the quadratic equation $3ax^2 + 2bx$ + c = 0 has
(a) non real roots (b) rational roots
(c) real roots (d) none of these

11. The value of λ for which the quadratic equation $3x^2 + 2(\lambda^2 + 1)x + (\lambda^2 - 3\lambda$+2) = 0 has roots of opposite signs, lies in the interval.
(a) (1, 2) (b) $\left(\frac{3}{2}, 2\right)$
(c) (-∞, 1) (d) $(-\infty, 0)$

12. For what value of m will the equation (m + 1) x^2 + 2(m + 3)x + m + 8 = 0 have equal roots?
(a) -1/2 (b) 2
(c) – 2 (d) 1/2

13.If α, β be the roots of $x^2 + px - q = 0$ and γ, δ be the roots of $x^2 + px + r = 0$, then the value of $(\alpha - \gamma)(\alpha - \delta)$ is
(a) p + r (b) q + r
(c) p + q + r (d) none of these

14.The quadratic equation whose roots are twice the roots of $2x^2 - 5x + 2 = 0$ is
(a) $8x^2 - 10x + 2 = 0$ (b) $x^2 - 5x + 4 = 0$
(c) $2x^2 - 5x + 2 = 0$ (d) none of these

15. If $x^2 + ax + b = 0$ and $x^2 + bx + a = 0$ have a common root, then the value of (a + b) is
(a) 1 (b) – 1 (c) 2 (d) -1/2

16. If α, β are the roots of the equation x^2 – 2x-1 = 0, then the value of $\alpha^2 + \beta^2$ is
(a) 8 (b) 12 (c) 6 (d) 2

17. If α, and β be the roots of the equation x^2+ x + 1 = 0, then the equation whose roots are $\frac{\alpha}{\beta}$ and $\frac{\beta}{\alpha}$ is
(a) $x^2 - x + 1 = 0$ (b) $x^2 + x + 1 = 0$
(c) $x^2 - x - 1 = 0$ (d) $x^2 + x - 1 = 0$

18. If one root of $x^2 - x - k = 0$ be square of the other, then k is equal to
(a) $3\pm\sqrt{2}$ (b) $2\pm\sqrt{3}$
(c) $2 \pm\sqrt{5}$ (d) $5\pm\sqrt{2}$

19. If the roots of $x^2 + a^2 = 8x + 6a$ be real, then
(a) $2 \leq a \leq 8$ (b) - 8 ≤ a ≤ 2
(c) $-2 \leq a \leq 8$ (c) none of these

20. If Δ ≥ 0 and Δ is not a perfect square, then the roots are
(a) real (b) equal
(c) rational (d) irrational

21. The coefficient of x+ px+ q = 0 was taken as 17 in place of 13 and its roots were found to be – 2 and – 15. The roots of the original equation are
(a) 3, 7 (b) -3, -7 (c) 3, 10 (d) -3, -10

22. The roots of the equation (q - r)x^2 + (r - p) x + (p - q) = 0 are
(a) (r - q)/(q - r), 1/2 (b) (p-q)/(q-r), 1
(c) (q - r)/(p-q), 1 (d) (r-p)/(p - q), ½

23. If the equation $(x + m)^2 - (x + n)^2 = (m - n)^2$, where m, n are non-zero constants and $m^2 \neq n^2$, is satisfied by x=$pm + gn$, then the ordered pair (p, q) is equal to
(a) (0, -1) (b) (-1, 0)
(c) (1, 0) (d) (0, 1)

24. The positive value of m, for which the roots of the equation $12x^2 + mx + 5 = 0$ are in the ratio 3 : 2, is
(a) $5\sqrt{10}$ (b) $\frac{5\sqrt{10}}{12}$ (c) $\frac{5}{12}$ (d) $\frac{12}{5}$

25. If $x^2 - px + 1 > 0$ for all real values of x, then $|x|$
(a) is less than 2 (b) is greater than 1
(c) is greater than 2 (d) can have any value

26. x + 2 is a commom factor of the expression $(x^2 + bx + a)$. The ratio $\frac{a}{b}$ is equal to
(a) 1 (b) 2 (c) 3 (d) 4

27. If the sum of the roots of the expression $(qx^2 + 2x + 3q = 0)$ is equal to their product, then the value of a is equal to
(a) -2/3 (b) 3/2 (c) 3 (d) -6

28.If α, γ are the roots of the equation $ax^2 + bx + c = 0$ are
(a) $-\alpha, -\beta$ (b) $\alpha, -\beta$
(c) $\alpha, 1/\beta$ (d) $1/\alpha, 1/\beta$

29.The roots of the equation $x^2 - \left(\frac{4}{\sqrt{5}+1} + \frac{1}{\sqrt{5}-1}\right)x + 1 = 0$ are:
(a) $\frac{4}{\sqrt{5}}$ (b) $-\frac{4}{\sqrt{5}+1}, -\frac{4}{\sqrt{5}-1}$
(c) $\frac{-1\pm\sqrt{\left(\frac{4}{\sqrt{5}+1}+\frac{1}{\sqrt{5}-1}\right)^2-4}}{2}$ (d) $\frac{4}{\sqrt{5}+1}, \frac{1}{\sqrt{5}-1}$

30. The number of solution of the equation $|x|^2 - 3|x| + 2 = 0$ *is*
(a) 2 (b) 3 (c) 4 (d) 5

31. If the equations $x^2 - px + q = 0$ and $x^2 + qx - p = 0$ have a common root, then which of the following will hold true ?
(a) p = q (b) p + q = 2
(c) p + q = 1 (d) p – q = 1

32. If α, β are the roots of the quadratic equation $4x^2 - 4x + 1 = 0$, then $\alpha^3 + \beta^3$ is equal to
(a) $\frac{1}{4}$ (b) $\frac{1}{8}$ (c) 16 (d) 32

33.If the roots of the equations $\lambda^2 + 8\lambda + \mu^2 + 6\mu = 0$, are real, then μ lies between
(a) -2 and 8 (b) -3 and 6 (c) -8 and 2 (d) -6 and 3

34. If a and b are non zero roots of $x^2 + ax + b = 0$, then the least value of $x^2 + ax + b$ is
(a) $\frac{2}{3}$ (b) $-\frac{9}{4}$ (c) $\frac{9}{4}$ (d) 1

35.If sin C and cos C are the two roots of a quadratic equation $2x^2 - px + 1 = 0$ where $0 < C < \pi/2$, than how many possible values can p have ?
(a) 1 (b) 2 (c) 3 (d) 4

36.In a quadratic equation, with leading coefficient 1, Sheela read the coefficient 16 of x wrongly as 19 and obtains the root as -15 and -4. Which of the following are the correct roots of the equation?
(a) 8, 8 (b) 6, 10 (c) -6, -10 (d) 12, 5

37.Both the roots of a quadratic equation $x^2 - mx + 121 = 0$ are greater than 10. What is the minimum value of m?
(a) 21 (b) 22
(c) 23 (d) cannot be determine

38. If the equations $x^2 - px + q = 0$ and $x^2 - rx + s = 0$ have a root in common and the second equation has equal roots then q + s is equal to which one of the following?
(a) pr/2 (b) 2pr (c) pr (d) p^2r

39. If the two quadratic equations $x^2 - bx + c = 0$ and $x^2 - b'x + c' = 0$ have a common root, what is the value of common root ?
(a) $\frac{b-b'}{c-c'}$ (b) $\frac{c-c'}{b-b'}$ (c) $\frac{b-b'}{c'-c}$ (d) $\frac{c-c'}{b'-b}$

40. The roots of the quadratic equation $x^2 + 4a = 8x - 12a^2$ are real and unequal, Which one of the following?
(a) 4/3 < a < 2 (b) -4/3 < a < -1
(c) -4/3 < a < 2 (d) -4/3 < a < 1

41.$f(x) = x^2 + 2ax + 1$ and α is root of the equation $f(x) = 0$, where a is real. Which one of the following is correct ?
(a) $f(\alpha) = 0$ and $f(1/\alpha) \neq 0$
(b) $f(\alpha) = 0$ and $f(1/\alpha) = 0$
(c) $f(\alpha) \neq 0$ and $f(1/\alpha) \neq 0$
(d) $f(\alpha) \neq 0$ and $f(1/\alpha) \neq 0$

42. If the roots of $x^2 + bx + c = 0$ are two consecutive integers, what is the value of $b^2 - 4c - 1$?
(a) 0 (b) 1 (c) -1 (d) 2

43.If the sum of n terms of a series is a quadratic expression in n, then the series is in
(a) G.P. (b) H.P. (c) A.P.
(d) Neither in G.P. nor in H.P. nor in A.P.

44. What is the common root in the equations $lx^2 + 2mx + n = 0$ and $lx^2 + 2nx + m = 0$; where m≠n ?
(a) 0 (b) 1/2
(c) 1 (d) Cannot be determine

45.The sum of the two roots of a quadratic equation is $\sqrt[3]{\lambda}$ and the sum of their squares is $\sqrt[3]{\mu^2}$. Which one of the following is that equation ?
(a) $x^2 - \sqrt[3]{\lambda}x + \left(\sqrt[3]{\lambda^2} - \sqrt[5]{\mu^2}\right) = 0$
(b) $x^2 - \sqrt[3]{\lambda}x + \left(\sqrt[3]{\lambda^2} + \sqrt[5]{\mu^2}\right) = 0$
(c) $2x^2 - 2\sqrt[3]{\lambda}x + \left(\sqrt[3]{\lambda^2} - \sqrt[5]{\mu^2}\right) = 0$
(d) $2x^2 - 2\sqrt[3]{\lambda}x + \left(\sqrt[3]{\lambda^2} + \sqrt[5]{\mu^2}\right) = 0$

46.What is the number of solution of the equation $x^2 - 5|x| + 6 = 0$?
(a) 2 (b) 0 (c) 1 (d) 4

47. The roots of the equation $x^2 + px + q = 0$ are both real and greater than 1. If r = P + q + 1, then which one of the following is correct?
(a) r must be greater than 0. (b) r must be less than 0.
(c) r must be equal to 0. (d) r may be equal to 0.

48.$ax^2 + bx + c = 0$ is a quadratic equation such that a≠b≠c and a + b + c =0. What is the nature of root?
(a) Both are positive. (b) Both are negative.
(c) They are real and distinct. (d) Both the imaginary.

49. Which one of the following is correct?
The equation $x - \left(\frac{7}{x-3}\right) = 3 - \left(\frac{7}{x-3}\right)$
(a) has only one integral root.
(b) has no roots.
(c) has two equal integral roots.
(d) has two unequal integral roots.

50.If r_2, r_2 are the roots of the equation $x^2 - px + (p-1) = 0$; for what value of $(r_1^2 + r_2^2)$minimum?
(a) p = 0 (b) p = -1
(c) p = 1 (d) p = 2

51. If the roots of the equation $4\beta^2 + \lambda\beta - 2 = 0$ are of the form $\frac{k}{k+1}$ and $\frac{k+1}{k+2}$, then what is the value of λ?
(a) $2k$ (b) 7 (c) 2 (d) $k + 1$

52. One of the roots of a quadratic equation with real coefficients is $\frac{1}{(2-3i)}$. Which of the following implication is/are true?
1. The second root of the equation will be $\frac{1}{(3-2i)}$.
2. The equation has no real root.

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3. The equation is $13x^2 - 4x + 1 = 0$.
Which of the above is/are correct?
(a) 1 and 2 only (b) 3 only
(c) 2 and 3 only (d) 1, 2 and 3

53. Given 4a – 2b + c = 0, where a, b, c ϵ R, Which of the following statement is/are not true in general?
(a) $(x+2)$ will always be a factor of the expression $ax^2 + bx + c$.
(b) $(x - 2)$ will always be a factor of the expression $ax^2 + bx + c$.
(c) There will be a factor of the expression $ax^2 + bx + c$ different from $(x + 2)$.
Select the correct answer using the code given below:
(a) 1 and 2 only (b) 1, 2 and 3
(c) 2 only (d) 1 only

54. If the sum of the squares of the roots $x^2 -$(p - 2)$x -$(p + 1) = 0 (p ϵ R) is 5, then what is the value of p ?
(a) 0 (b) -1 (c) 1 (d) $\frac{3}{2}$

55. What is the number of real solution of $|x^2 - x - 6| = x + 2$?
(a) 4 (b) 3 (c) 2 (d) 1

56. If $(\log_3 x)^2 + \log_3 x < 2$, then which one of the following is correct ?
(a) 0 <x<$\frac{1}{9}$ (b) $\frac{1}{9}$<x< 3
(c) 3 <x<∞ (d) $\frac{1}{9} \leq x \leq 3$

57. If sin θ and cos θ are the roots of $ax + bx^2 + c = 0$, then constant a, b, c will satisfy which one of the following condition?
(a) $a^2 + b^2 + 2ac = 0$ (b) $a^2 + b^2 - 2ac = 0$
(c) $a^2 - b^2 + 2ac = 0$ (d) $-a^2 + b^2 + 2ac = 0$

58. If the equation $x^2 + k^2 = 2(k + 1)x$ has equal roots, then what is the value of ?
(a) $-\frac{1}{3}$ (b) $-\frac{1}{2}$ (c) 0 (d) 1

59. How many real values of x satisfy the equation $|x| + |x - 1| = 1$?
(a) 1 (b) 2
(c) infinite (d) No value of x

60. If α, β are the roots of $ax^2 + 2bx + c = 0$ and $\alpha + \delta$, $\beta + \delta$ are the roots of $Ax^2 + 2Bx + C = 0$, then what is the $(b^2 - ac)/(B^2 - AC)$ equal to
(a) $\left(\frac{b}{B}\right)^2$ (b) $\left(\frac{a}{A}\right)^2$ (c) $\frac{(a^2b^2)}{(A^2B^2)}$ (d) $\frac{(ab)}{(AB)}$

61. If α, β are the roots of $ax^2 + bx + c = 0$, then what is the value of $(a\alpha + b)^{-1} + (\alpha\beta + b)^{-1}$?
(a) $\frac{a}{(bc)}$ (b) $\frac{b}{(ac)}$ (c) $\frac{-b}{(ac)}$ (d) $\frac{-a}{(bc)}$

62 If α, β are the roots of the equation $x^2 - 2x$-1 =0, then what is the value of $\alpha^2\beta^{-2} + \alpha^{-2}\beta^2$?
(a) -2 (b) 0 (c) 30 (d) 34

63. If the roots of the equation $x^2 - (a - 1)x + (a + b) = 0$and $ax^2 - 2x$+ b = 0 are identical, then what are the values of a and b?
(a) a = 2, b = 4 (b) a = 2, b = -4
(c) a = 1, b = $\frac{1}{2}$ (d) a = -1, b = -$\frac{1}{2}$

64. If $-x^2 + 3x + 4 > 0$, then which one of the following is correct?
(a) $x \epsilon (-1, 4)$ (b) $x \epsilon (+1, 4)$
(c) $x \epsilon (-\infty, -1) \cup (4, \infty)$ (d) $x \epsilon (-\infty, 1) \cup (4, \infty)$

65. If α and β are the roots of the equation $x^2 + x + 1 = 0$, then what is the equation whose roots are $\alpha^{19}$and β^7 ?
(a) $x^2 - x - 1 = 0$ (b) $x^2 - x + 1 = 0$
(c) $x^2 + x - 1 = 0$ (d) $x^2 + x + 1 = 0$

66. If α and β are the roots of the equation $x^2 + 6x + 1 = 0$, then what is $|\alpha - \beta|$ equal to ?
(a) 6 (b) $3\sqrt{2}$ (c) $4\sqrt{2}$ (d) 12

67. The number of rows in a lecture hall equal to the number of seats in a row. If the number of rows is doubled and the number of seats in every row is reduced by 10, the number of seats is increased by 300. If x denotes the number of rows in the lecture hall, then what is the value of x?
(a) 10 (b) 15 (c) 20 (d) 30

68. If α and β are the roots of the equation $lx^2\ mx + m = 0, l \neq m, l \neq 0$, then which one of the following statements is corrects?
(a) $\sqrt{\frac{\alpha}{\beta}} + \sqrt{\frac{\beta}{\alpha}} - \sqrt{\frac{m}{l}} = 0$ (b) $\sqrt{\frac{\alpha}{\beta}} + \sqrt{\frac{\beta}{\alpha}} + \sqrt{\frac{m}{l}} = 0$
(c) $\sqrt{\frac{\alpha+\beta}{\alpha\beta}} - \sqrt{\frac{m}{l}} = 0$
(d) The arithmetic mean of α and β is the same as their geometric mean.

69. For what value of k, are the roots of the quadratic equation $(k$-1$)x^2 - 2(k - 1)x + 1 = 0$ real and equal ?
(a) k= only (b) k= -3 only
(c) k= 0 or k= 3 (d) k= 0 or k= -3

70. Which one of the following is correct ? If 4 <x^2< 9, then ?
(a) 2 <x< 3 only (b) -3 <x< -2 only
(c) 2 <x< 3, -3 <x< -2 (d) None of these

71. If α and β are the roots of the equation $ax^2 + bx + c = 0$, then what are the roots of the equation $cx^2 + bx + a = 0$?
(a) $\beta, \frac{1}{\alpha}$ (b) $\alpha, \frac{1}{\beta}$
(c) - α, - β (d) $\frac{1}{\alpha}, \frac{1}{\beta}$

72. If x and y are real number such that x>y and $|x| > |y|$, then which one of the following is correct?
(a) x> 0 (b) y> 0 (c) y< 0 (d) x< 0

73. If roots of an equation $ax^2 + bx + c = 0$ are positive, then which one of the following is correct ?
(a) Signs of a and c should be like.
(b) Signs of b and c should be like.
(c) Signs of a and b should be like.
(d) None of above.

74. If x is real and $x^2 - 3x + 2 > 0$,
$x^2 - 3x - 4 \leq 0$, then which one of the following is correct?
(a) -1$\leq x \leq 4$ (b) $2 \leq x \leq 4$
(c) $-1 < x \leq 1$ (d) $-1 \leq x < 1$or 2 <$x \leq 4$

75. What is the value of $\sqrt{5\sqrt{5\sqrt{5\sqrt{\ldots\infty}}}}$?
(a) 5 (b) $\sqrt{5}$ (c) 1 (d) $(5)^{1/4}$

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76. For the real numbers p, q, r, x, y, let p <x< q and p <y<r, which one of the following is correct ?
(a) $p < x < y < r$ (b) $p < x < q < r$
(c) $p < y < x < q$ (d) None of these

77. One root of the equation $x^2 = px + q$ is reciprocal of the other and p $\neq \pm 1$. What is the value of q ?
(a) q = -1 (b) q = 1 (c) q = 0 (d) q = $\frac{1}{2}$

78. The numerical value of the perimeter of a square exceeds that of its area by 4. What is the side of the square?
(a) 1 unit (b) 2 unit (c) 3 unit (d) 4 unit

79. If the equation$x^2 + kx + 1 = 0$ has the roots $\alpha$and β, then what is the value of $(\alpha + \beta)$ x $(\alpha^{-1} + \beta^{-1})$?
(a) k^2 (b) $\frac{1}{k^2}$ (c) 2 k^2 (d) $\frac{1}{(2\,k^2)}$

80. If x is an integer and satisfies 9 <4x- 1 $\leq$ 19, Then x is an element of which one of the following sets ?
(a) {3, 4} (b) {2, 3, 4}
(c) {3, 4, 5} (d) {2, 3, 4, 5}

81. A quadratic polynomial with two distinct roots has one real root. Then, the other root is
(a) not necessarily real, if the coefficients are real.
(b) always imaginary.
(c) always real.
(d) real, if the coefficients are real.

82. If sin α and cos α are the roots of the equation $px^2 + qx + r = 0$, then which one of the following is correct ?
(a) $p^2 + q^2 - 2pr = 0$ (b) $p^2 - q^2 + 2pr = 0$
(c) $(p + r)^2 = 2(p^2 + r^2)$ (d) $(p - r)^2 = q^2 + r^2$

83. If the roots of the equation $x^2 - bx + c = 0$ are two consecutive integers, then what is the value of$b^2 - 4c$?
(a) 1 (b) 2 (c) -2 (d) 3

84. If r and s are roots of $x^2 + px + q = 0$, then what is the value of$(1/r^2) + (1/s^2)$?
(a) $p^2 - 4q$ (b) $\frac{p^2-4q}{2}$
(c) $\frac{p^2-4q}{q^2}$ (d) $\frac{p^2-2q}{q^2}$

85. If α and β are the roots of $x^2 + 4x + 6 = 0$, then what is the value of $\alpha^3 + \beta^3$?
(a) $-\frac{2}{3}$ (b) $\frac{2}{3}$ (c) 4 (d) 9

86. If sum of the roots of $3x^2 + (3p + 1)x - (p + 5) = 0$ is equal to their product, then what is the value of p ?
(a) 2 (b) 3 (c) 4 (d) 9

87. Let α, γ be the roots of $Ax^2 - 4x + 1 = 0$ and β, δ are in HP, then what are the values of A and B respectively ?
(a) 3, 8 (b) -3, -8 (c) 3, -8 (d) -3, 8

88. If $2^x + 3^y = 17$and $2^{x+2} - 3^{y+1} = 5$, then what is the value of x ?
(a) 3 (b) 2 (c) 1 (d) 0

89. If $(x + a)$ is a factor of both the equal quadratic polynomials $x^2 + px + q$ and $x^2 + lx + m$, where p, q, l and m are constant, then which one of the following is correct ?
(a) a =(m - q)/(l - p)($l \neq$ p) (b) a = (m + q)/(l + p)($l \neq$ - p)
(c) l = (m - q)/(a - p)(a $\neq$ p) (d) p = (m - q)/(a - l) (a $\neq$ l)

90.Which one of the following is one of the roots of the equation (b - c)x^2 + (c - a)x + (a-b) = 0 ?
(a) $\frac{(c-a)}{(b-c)}$ (b) $\frac{(a-b)}{(b-c)}$ (c) $\frac{(b-c)}{(a-c)}$ (d) $\frac{(c-a)}{(a-b)}$

91. What is the value of x satisfying the equation $16\left(\frac{a-x}{a+x}\right)^3 = \frac{a+x}{a-x}$?
(a) $\frac{a}{2}$ (b) $\frac{a}{3}$ (c) $\frac{a}{4}$ (d) 0

92. If α, β are the roots of the equation $2x^2 - 2(1 + n^2)x + (1 + n^2 + n^4) = 0$, Then what is the value of $\alpha^2 + \beta^2$?
(a) $2n^2$ (b) $2n^4$ (c) 2 (d) 0

93. The roots of $Ax^2 + Bx + C = 0$ are $r$ans s. For the roots of $x^2 + px + q = 0$ to be $r^2$and s^2, what must be the value of p ?
(a) $\frac{(B^2-4AC)}{A^2}$ (b) $\frac{(B^2-4AC)}{A^2}$
(c) $\frac{(2AC-B^2)}{A^2}$ (d) $B^2 - 2C$

94. If the sum of the first two terms and the sum of the first four terms of a geometric with common ratio are 8 and 80 respectively, then what is the 6thterm?
(a) 88 (b) 243 (c) 486 (d) 1458

95. If α, β are the roots of $ax^2 + bx + b = 0$, then what is $\frac{\sqrt{\alpha}}{\sqrt{\beta}} + \frac{\sqrt{\beta}}{\sqrt{\alpha}} + \frac{\sqrt{b}}{\sqrt{a}}$equal to ?
(a) 0 (b) 1 (c) 2 (d) 3

96. If the roots of $ax^2 + bx + c = 0$ are sin α and cos α for some α, then which one of the following is correct ?
(a) $a^2 + b^2 = 2ac$ (b) $b^2 - c^2 = 2ab$
(c) $b^2 - a^2 = 2ac$ (d) $b^2 + a^2 = 2ac$

97. If x = 2 + $2^{1/3}$+ $2^{2/3}$, then what is the value of $x^3 - 6x^2 + x$?
(a) 1 (b) 2 (c) 3 (d) -2

98. The roots of the equation $(x - p)(x - q) = r^2$, where p, q, r are real, are
(a) always complex (b) always complex
(c) always purely imaginary (d) None of the above.

99. The equation $x - 2(x - 1)^{-1} = 1 - 2(x - 1)^{-1}$ has
(a) no roots (b) one roots
(c) two equal roots (d) infinite roots

100. If a, b and c are real number, then the roots of the equation $(x - a)(x - b)+(x - b)(x - c)+(x - c)(x - a)$ = 0 are always
(a) real (b) imaginary
(c) positive (d) negative