QB365 Question Bank Software Study Materials

Algebra 50 Important 1 Marks Questions With Answers (Book Back and Creative)

10th Standard

Maths

Total Marks : 50

Multiple Choice Question

50 x 1 = 50

1) A system of three linear equations in three variables is inconsistent if their planes

   (a) intersect only at a point   (b) intersect in a line   (c) coincides with each other   **(d) do not intersect**

2) The solution of the system x + y − 3z = −6, −7y + 7z = 7, 3z = 9 is

   (a) x = 1, y = 2, z = 3   (b) x = −1, y = 2, z = 3   (c) x = −1, y = −2, z = 3   (d) x = 1, y = -2, z = 3

3) If (x - 6) is the HCF of x^2 - 2x - 24 and x^2 - kx - 6 then the value of k is

   (a) 3   **(b) 5**   (c) 6   (d) 8

4) $\frac{3y-3}{y} \div \frac{7y-7}{3y^2}$ is

   (a) $\frac{9y}{7}$ (b) $\frac{9y^2}{(21y-21)}$ (c) $\frac{21y^2-42y+21}{3y^2}$ (d) $\frac{7(y^2-2y+1)}{y^2}$

5) $y^2 + \frac{1}{y^2}$ is not equal to

   (a) $\frac{y^2+1}{y^2}$ **(b)** $\left(y+\frac{1}{y}\right)^2$ (c) $\left(y-\frac{1}{y}\right)^2 + 2$ (d) $\left(y+\frac{1}{y}\right)^2 - 2$

6) $\frac{x}{x^2-25} - \frac{8}{x^2+6x+5}$ gives

   (a) $\frac{x^2-7x+40}{(x-5)(x+5)}$ (b) $\frac{x^2+7x+40}{(x-5)(x+5)(x+1)}$ **(c)** $\frac{x^2-7x+40}{(x^2-25)(x+1)}$ (d) $\frac{x^2+10}{(x^2-25)(x+1)}$

7) The square root of $\frac{256x^8y^4z^{10}}{25x^6y^6z^6}$ is equal to

   (a) $\frac{16}{5}\left|\frac{x^2z^4}{y^2}\right|$ (b) $16\left|\frac{y^2}{x^2z^4}\right|$ (c) $\frac{16}{5}\left|\frac{y}{xz^2}\right|$ **(d)** $\frac{16}{5}\left|\frac{xz^2}{y}\right|$

8) Which of the following should be added to make x^4 + 64 a perfect square

   (a) $4x^2$ **(b) $16x^2$**   (c) $8x^2$ (d) $-8x^2$

9) The solution of $(2x - 1)^2$ = 9 is equal to

   (a) -1   (b) 2   **(c) -1, 2**   (d) None of these

10) The values of a and b if $4x^4$ - $24x^3$ + $76x^2$ + ax + b is a perfect square are

   (a) 100, 120   (b) 10, 12   **(c) -120, 100**   (d) 12, 10

11) If the roots of the equation q^2x^2 + p^2x + r^2 = 0 are the squares of the roots of the equation qx^2 + px + r = 0, then q, p, r are in _____.

   (a) A.P   **(b) G.P**   (c) Both A.P and G.P   (d) none of these

12) Graph of a linear equation is a _____

   (a) straight line   (b) circle   (c) parabola   (d) hyperbola

13) The number of points of intersection of the quadratic polynomial x^2 + 4x + 4 with the X axis is

   (a) 0   **(b) 1**   (c) 0 or 1   (d) 2

14) For the given matrix $A = \begin{pmatrix} 1 & 3 & 5 & 7 \\ \end{pmatrix}$

For the given matrix A = $\begin{pmatrix} 2 & 4 & 6 & 8 \\ 9 & 11 & 13 & 15 \end{pmatrix}$ the order of the matrix A' is

(a) 2 x 3   (b) 3 x 2   (c) 3 x 4   **(d) 4 x 3**

15) If A is a 2 x 3 matrix and B is a 3 x 4 matrix, how many columns does AB have

(a) 3   **(b) 4**   (c) 2   (d) 5

16) If number of columns and rows are not equal in a matrix then it is said to be a

(a) diagonal matrix   **(b) rectangular matrix**   (c) square matrix   (d) identity matrix

17) Transpose of a column matrix is

(a) unit matrix   (b) diagonal matrix   (c) column matrix   **(d) row matrix**

18) Find the matrix X if 2X + $\begin{pmatrix} 1 & 3 \\ 5 & 7 \end{pmatrix} = \begin{pmatrix} 5 & 7 \\ 9 & 5 \end{pmatrix}$

(a) $\begin{pmatrix} -2 & -2 \\ 2 & -1 \end{pmatrix}$ **(b) $\begin{pmatrix} 2 & 2 \\ 2 & -1 \end{pmatrix}$**   (c) $\begin{pmatrix} 1 & 2 \\ 2 & 2 \end{pmatrix}$ (d) $\begin{pmatrix} 2 & 1 \\ 2 & 2 \end{pmatrix}$

19) Which of the following can be calculated from the given matrices A = $\begin{pmatrix} 1 & 2 \\ 3 & 4 \\ 5 & 6 \end{pmatrix}$, B = $\begin{pmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{pmatrix}$,

(i) A^2

(ii) B^2

(iii) AB

(iv) BA

(a) (i) and (ii) only   (b) (ii) and (iii) only   **(c) (ii) and (iv) only**   (d) all of these

20) If A = $\begin{pmatrix} 1 & 2 & 3 \\ 3 & 2 & 1 \end{pmatrix}$, B = $\begin{pmatrix} 1 & 0 \\ 2 & -1 \\ 0 & 2 \end{pmatrix}$ and C = $\begin{pmatrix} 0 & 1 \\ -2 & 5 \end{pmatrix}$, Which of the following statements are correct?

(i) AB + C = $\begin{pmatrix} 5 & 5 \\ 5 & 5 \end{pmatrix}$

(ii) BC = $\begin{pmatrix} 0 & 1 \\ 2 & -3 \\ -4 & 10 \end{pmatrix}$

(iii) BA + C = $\begin{pmatrix} 2 & 5 \\ 3 & 0 \end{pmatrix}$

(iv) (AB)C = $\begin{pmatrix} -8 & 20 \\ -8 & 13 \end{pmatrix}$

(a) (i) and (ii) only   (b) (ii) and (iii) only   (c) (iii) and (iv) only   (d) all of these

21) $\frac{x^2+7x12}{x^2+8x+15} \times \frac{x^2+5x}{x^2+6x+8} = \underline{\hspace{2cm}}$

(a) x+2   **(b) $\frac{x}{x+2}$**   (c) $\frac{35x^2+60x}{48x^2+120}$ (d) $\frac{1}{x+2}$

22) The product of the sum and product of roots of equation $(a^2-b^2)x^2-(a+b)^2x+(a^3-b^3) = 0$ is $\underline{\hspace{2cm}}$

(a) $\frac{a^2+ab+b^2}{(a-b)}$ (b) $\frac{a-b}{a+b}$ (c) $\frac{a-b}{a+b}$ (d) $\frac{a-b}{a^2+ab+b^2}$

23) If $2A + 3B = \begin{bmatrix} 2 & -1 & 4 \\ 3 & 2 & 5 \end{bmatrix}$ and $A + 2B = \begin{bmatrix} 5 & 0 & 3 \\ 1 & 6 & 2 \end{bmatrix}$ then B = [hint: B = (A+2B)-(2+3B)]

(a) $\begin{bmatrix} 8 & -1 & -2 \\ -1 & 10 & -1 \end{bmatrix}$ (b) $\begin{bmatrix} 8 & -1 & 2 \\ -1 & 10 & -1 \end{bmatrix}$ (c) $\begin{bmatrix} 8 & 1 & 2 \\ -1 & 10 & -1 \end{bmatrix}$ **(d) $\begin{bmatrix} 8 & 1 & 2 \\ 1 & 10 & 1 \end{bmatrix}$**

24) If $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \\ 5 & 6 \end{bmatrix}_{3\times2}$ $B = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix}_{2\times3}$ then which of the following products can be made from these matrices

(i) A^2

(ii) B^2

(iii) AB

(iv) BA

(a) (i) only   (b) (ii) and (iii) only   **(c) (iii) and (iv) only**   (d) all the above

25) If α and β are the roots of $ax^2 + bx + c = 0$ then one of the quadratic equations whose roots are $1/α$ and $1/β$ is _____

   (a) $ax^2 + bx + c = 0$ (b) $bx^2 + ax + c = 0$ (c) $cx^2 + bx + a = 0$ (d) $cx^2 + ax + b = 0$

26) The value of x in (x + 2) + 2(x - 1) = 4x - 3

   (a) 2   **(b) 3**   (c) -2   (d) -3

27) solve for $x : \left(x - \frac{1}{2}\right)^2 - \left(x - \frac{3}{2}\right)^2 = x + 2$

   (a) 4   (b) 8   (c) -4   (d) -8

28) What should be the value of P if 3x + 2y = 8 and 6x + 4y = 9 have infinitely many solutions?

   (a) 3   **(b) 16**   (c) 5   (d) 6

29) If the Sum of two numbers is 640 and their difference is 280, then the numbers are _____

   (a) 140, 500   **(b) 180, 460**   (c) 130, 510   (d) 150, 490

30) The total salary of 15 men and 8 women in Rs 3050. The difference of salaries of 5 women and 3 men is Rs 50. Find the sum of the salaries of 3 men and 5 women

   (a) Rs 900   (b) Rs 850   **(c) Rs 950**   (d) Rs 1000

31) If the GCD and LCM of two expressions are x + 2 and $(x + 2)^2 (x - 2)$ respectively, then the two expressions are _____

   (a) (x + 2),(x - 2)   **(b) $(x + 2)^2, (x^2 - 4)$**   (c) $(x + 2),(x^2 - 4)$ (d) $(x + 2)^2,(x - 2)$

32) The GCD and LCM of a and b are 27 and 2079 respectively. If a is divided by 9, the quotient is 21. Then b is _____

   (a) 243   (b) 189   (c) 113   **(d) 297**

33) The LCM of $x^2 - 3ax + 2a^2, x^2 - 4ax + 4a^2$ and $x^2 - ax - 2a^2$ is

   (a) $(x - 2a)^2 \left(x^2 - a^2\right)$ (b) $(x - a)^2(x - 2a)$ (c) $(x - a)(x - 2a)(x - 3a)$ (d) $(x - 2a)^3$

34) Simplest form of $\frac{a^2 - b^2}{a^2 - 3ab + 2b^2}$ is _____

   (a) $\frac{(a+b)^2}{a-2b}$ **(b) $\frac{a+b}{a-2b}$**   (c) $\frac{a-b}{a-2b}$ (d) $\frac{a+b}{a+2b}$

35) Simplest form of $\frac{x^7 + 2x^6 + x^5}{x^3(x+1)^8}$ is

   (a) $\frac{x^2}{(x^6+1)}$ **(b) $\frac{x^2}{(x+1)^6}$**   (c) $\frac{x^3}{x+1}$ (d) $\frac{x^4}{x+2}$

36) $\frac{x^2 - 5x - 14}{x^2 - 3x + 2} \times \frac{x^2 - 4}{x^2 - 14x + 49} =$ _____

   (a) $\frac{x+2}{x+7}$ (b) $\frac{(x+2)^2}{x-7}$ **(c) $\frac{(x+2)^2}{(x-1)(x-7)}$**   (d) $\frac{x-2}{(x-1)(x-7)}$

37) Simplify $\frac{(y^2 + 5y + 4)}{\left(\frac{y^2 - 1}{y+5}\right)}$

   (a) $\frac{y-1}{y-4}$ (b) $\frac{y+5}{y-1}$ (c) $\frac{(y+4)(y+3)}{y-1}$ **(d) $\frac{y^2 + 9y + 20}{y-1}$**

38) Excluded values of $\frac{2x+1}{x^2 - x - 6}$ are

   (a) 1, -2   **(b) -2, 3**   (c) 2, -3   (d) 2, 3

39) Which of the following is a quadratic equation?

   (a) $x^{1/2} + 2x + 3 = 0$ (b) (x -1) (x + 4) = $x^2 + 1$ **(c) $x^2 - 3x + 5 = 0$**   (d) (2x + 1) (3x - 4) = $6x^2 + 3$

40) The Quadratic equation whose roots $\frac{p}{q}, \frac{-q}{p}$ is _____

(a) $qx^2 - \left(q^2 + p^2\right)x - pq = 0$ **(b)** $pqx^2 - \left(p^2 - q^2\right)x - pq = 0$ (c) $px^2 - \left(p^2 + 1\right)x + p = 0$

(d) $p^2x^2 - \left(p^2 - q^2\right)x - pq = 0$

41) The condition for $px^2 + qx + r = 0$ to be a pure quadratic equation is then the second root is _____

(a) p = 0   **(b)** **q = 0**   (c) r = 0   (d) p = q = 0

42) If the discriminant of $3x^2$ - 14 x + k = 0 is 100, then k = _____

(a) **8**   (b) 32   (c) 16   (d) 24

43) The roots of the equation x^2 + kx + 12 = 0 will differ by unity only when _____

(a) $k = \pm\sqrt{12}$ (b) $k = \pm\sqrt{48}$ (c) $k = \pm\sqrt{47}$ **(d)** $k = \pm\sqrt{49}$

44) If α, β are the roots of the equation x^2+k x+12 = 0, such that $\alpha - \beta = 1$, then the value of k_____

(a) 0   (b) ± 5 (c) ± 1 **(d)** ± 7

45) If $\mathbf{A} = \begin{bmatrix} x & 1 \\ 1 & 0 \end{bmatrix}$ and $\mathbf{A}^2 = \mathbf{I}$, then $\mathbf{x} =$

(a) **0**   (b) 1   (c) -1   (d) 2

46) If $\mathbf{A} \begin{bmatrix} 3 & -3 \\ -3 & 3 \end{bmatrix}$ and $\mathbf{A}^2 = \mathbf{kA}$, then $\mathbf{k} =$

(a) 4   (b) 5   **(c)** **6**   (d) 7

47) If $\mathbf{A} + \mathbf{B} = \begin{bmatrix} 10 & 8 \\ 8 & 4 \end{bmatrix}$ and $\mathbf{A} - \mathbf{B} = \begin{bmatrix} 2 & -4 \\ 0 & 6 \end{bmatrix}$, then A =

(a) $\begin{bmatrix} 6 & 2 \\ 4 & 5 \end{bmatrix}$ (b) $\begin{bmatrix} 6 & 2 \\ 4 & 6 \end{bmatrix}$ (c) $\begin{bmatrix} 4 & 6 \\ 4 & -1 \end{bmatrix}$ (d) $\begin{bmatrix} 1 & 3 \\ 4 & 5 \end{bmatrix}$

48) If $\mathbf{A} = \begin{bmatrix} 2 & 0 \\ 0 & 1 \end{bmatrix}$ and $f(\mathbf{x}) = x^2 - 5\mathbf{x} + 4\mathbf{I}$, then $f(\mathbf{A}) =$

(a) $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ (b) $\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$ (c) $\begin{bmatrix} 2 & 0 \\ 0 & 2 \end{bmatrix}$ **(d)** $\begin{bmatrix} -2 & 0 \\ 0 & 0 \end{bmatrix}$

49) If order of A,B,C are 3 x 4, 5 x 4 and 5 x 8, then the order of (AB^TC) is

(a) 8 x 3   **(b)** **3 x 8**   (c) 3 x 4   (d) 4 x 5

50) If ax^2 + bx + c = 0 has equal roots, then C is equal _____.

(a) $\frac{b^2}{2a}$ (b) $\frac{b^2}{4a}$ (c) $\frac{-b^2}{2a}$ **(d)** $\frac{-b^2}{4a}$