

IV. Match the following.

[5 x 1 = 5]

- 41) $x^2 - 1$ [] a. $(x+1)(x^2 - x + 1)$
 42) $x^3 - 1$ [] b. $(x^2 - x + 1)(x^2 + x + 1)$
 43) $x^3 + 1$ [] c. $(x+1)(x-1)(x^2 + 1)$
 44) $x^4 - 1$ [] d. $(x+1)(x-1)$
 45) $x^4 - x^2 + 1$ [] e. $(x-1)(x^2 + x + 1)$

V. Reason Type Questions.

[5 x 1 = 5]

Instruction: The questions given below, consists of two statements viz Statement-1 (assertion) and Statement-2 (reason). Use the following key to choose appropriate answer.

- (a) Both statements are correct and Statement-2 is the correct explanation of Statement-1.
 (b) Both statements are correct but Statement-2 is not correct explanation of Statement-1.
 (c) Statement-1 is true & Statement-2 is false.
 (d) Statement-1 is false & Statement-2 is true.
 (e) Both the statements are false.

- 46) **Statement-1** : $x^3 + 1$ is a multiple of $x + 1$ []
Statement-2 : $x^3 - 1 = (x-1)(x^2 + x + 1)$
 47) **Statement -1** : if $f(x) = x^4 - 1$ is divided by $x + 1$, the remainder will be 0. []
Statement-2 : if $f(x) = x^4 - 1$ then $f(-1)=0$
 48) **Statement-1** : The line $x = 5$ is parallel to the x-axis. []
Statement-2 : The line joining the points whose x value is a constant is parallel to y-axis.
 49) **Statement-1** : The roots of $(x-a)(x-b) + (x-b)(x-c) + (x-c)(x-a) = 0$ are real []
Statement-2 : A quadratic equation with non-negative discriminate has real roots.
 50) **Statement-1** : If the area of two similar triangles are equal, they are equal.
Statement-2 : If two triangles are equiangular, then they are similar. []

* * * BEST OF LUCK * * *



IIT Foundation (Test - 01)

CLASS-IX (MATHEMATICS)

Total Marks

50

Name :

Roll No : Sec :

I. Choose the correct answer:

[22 x 1 = 22]

- If the product of two zeros of the polynomial $2x^3 + 6x^2 - 4x + 9$ is 3, then its third zero is:
 a) $3/2$ b) $-3/2$ c) $9/2$ d) None of these
- If the polynomials $2x^3 + ax^2 + 3x - 5$ and $x^3 + x^2 - 4x + a$ leave the same remainder when divided by $x - 2$ then the value of a is:
 a) $3/13$ b) $3/17$ c) $-3/13$ d) None of these
- When a polynomial $2x^3 + 5x^2 - 2x - 6$ is divided by $x + 1$ then the remainder will be:
 a) 1 b) -1 c) 2 d) None of these
- If $(2, 0)$ is a solution of the linear equation $2x + 3y = k$, then the value of k is
 a) 4 b) 6 c) 5 d) None of these
- Which of the following is not a possible solution for $2x - 5y = 4$?
 a) $(2, 0)$ b) $(7, 2)$ c) $(15, 6)$ d) None of these
- For what value of k will the equations $2x + ky = 1$ and $5x - 7y = 5$ represent two parallel lines:
 a) $-14/5$ b) $14/5$ c) $-17/5$ d) None of these
- The lines $3x - 2y = 1$, $4x + 3y = 7$ and $x = 1$ intersect in:
 a) one point b) two points c) infinite number of points d) None of these
- Hari bought 30 stamps consisting of 20 paise and 30 paise stamps. Given that the stamps cost Rs. 7.80 altogether, how many 20 paise stamps did he buy?
 a) 12 b) 14 c) 10 d) None of these
- If $x^2 + 5y^2 + z^2 = 2y(2x + z)$ then which of the following statement is true.
 a) $x = 2y$ b) $x = 3z$ c) $2x = z$ d) None of these
- The roots of the quadratic equation $4x^2 - 4x + 1 = 0$ are
 a) not real b) real and equal c) real and irrational d) None of these
- If one root of $px^2 - 14x + 8 = 0$ is six times the other, then the value of p is:
 a) 1 b) 2 c) 3 d) None of these

- 12) If α and β are the roots of the equation $x^2 - x + 1 = 0$ the value of $\alpha^{2009} + \beta^{2009} =$
a) 1 b) -1 c) -2 d) None of these
- 13) Factorization method is used to find the _____ of a quadratic equation.
a) Value b) Roots c) Order d) None of these
- 14) If $2x^2 + 3x + 1 = 0$, then $x =$ _____
a) 1 or $-\frac{1}{2}$ b) -1 or $\frac{1}{2}$ c) -2 or 3 d) None of these
- 15) if $4x^2 + 5x + 1 = 0$, and one root is $-\frac{1}{4}$ then the other root is _____
a) -2 b) 3 c) -1 d) None of these
- 16) In a quadratic equation $ax^2 + bx + c = 0$ and $b^2 - 4ac > 0$ then the roots are _____
a) Complex b) Rational c) Real d) None of these
- 17) Find the area of the triangle whose vertices are (4,5), (0,7), (-1,1).
a) 13 sq. units b) 15 sq. units c) 18 sq. units d) None of these
- 18) A(0,-6), B(1, -3) and C(k, k) are collinear then AB : BC = _____
a) 2:1 b) 1:2 c) 2:3 d) None of these
- 19) Find the co-ordinates of a point on x-axis, which is at a distance of 5 units from the point (6, -3).
a) (2, 0) and (5, 0) b) (3, 0) and (4, 6) c) (2, 0) and (10, 0) d) None of these
- 20) If the ratio of the sides of two triangles is 2: 3 then the ratio of their areas is :
a) 2:3 b) 4:9 c) 5:16 d) None of these
- 21) If the corresponding medians of two similar triangles are in the ratio 3: 4. Then the corresponding sides will be in the ratio of:
a) 3:4 b) 4: 3 c) 9: 16 d) None of these
- 22) In a triangle ABC, $\angle A + \angle B = 144^\circ$ and $\angle A + \angle C = 124^\circ$, then $\angle B =$
a) 56° b) 60° c) 65° d) None of these

II. Say True or False:

[5 x 1 = 5]

- 23) The roots of the equation $3x^2 + 2x + 5 = 0$ are real numbers. []
- 24) $(px + q)(rx + s) = 0$ is a quadratic equation. []
- 25) The point (a, b) lies on y-axis if $b = 0$. []
- 26) The mid point of the line joining (0, 0) and (5, 6) is (5, 3). []
- 27) An isosceles triangle may be a right angled triangle. []

III. More than one correct answer:

[5 x 1 = 5]

- 28) Factors of polynomial $12x^2 - 7x + 1$ are:
a) $(3x - 1)(4x - 1)$ b) $(4x - 1)(3x - 1)$ c) $(4x - 1)(3x + 1)$ d) None of these
- 29) Which of the following are the solutions of the system of the equations $3x + 4y - 2 = 0$ and $6x + 8y = 4$?
a) (-2, 2) b) (-3, 3) c) (10, -7) d) None of these
- 30) If the equation $x^2 + ax + b = 0$ and $x^2 + bx + a = 0$ have a common root then
a) $a = b$ b) $a + b = 0$ c) $a + b = -1$ d) None of these
- 31) Which of the points does not lie on the x-axis.
a) (0, -1) b) (1, -1) c) (-4, 0) d) None of these
- 32) Which of the following point does not lie in the 3rd quadrant?
a) (-1, 2) b) (6, 3) c) (-1, -2) d) None of these

IV. Solve the following:

[8 x 1 = 8]

- 33) Find the value of $a^3 + b^3 + c^3 - 3abc$ given that $a + b + c = 10$ and $a^2 + b^2 + c^2 = 83$.
- 34) For what value of k, the pair of equations $4x - 3y = 9$, $2x + ky = 11$ has no solution?
- 35) A man earns Rs. 600 per month more than his wife. One-tenth of the man's salary and $\frac{1}{6}$ th of the wife's salary amount to Rs. 1,500, which is saved every month. Find their incomes.
- 36) Length of a rectangle is 2 units greater than its breadth. If the area of the rectangle is 120sq. units then find its length.
- 37) Is it possible to design a rectangular park of perimeters 60units and area 200 sq. units. If possible find its length and breadth.
- 38) ABCD is a rectangle whose three vertices are B(4, 0), C(4, 3) and D(0, 3). Calculate the length of one of its diagonals.
- 39) Find the ratio in which the point P($\frac{3}{4}$, $\frac{5}{12}$) divides the line segment joining the points A($\frac{1}{2}$, $\frac{3}{2}$) and B(2, -5)
- 40) Find the ratio in which y-axis divides the line segment joining the points A(5, -6), and B(-1, -4). Also find the coordinates of the point of division.