

VI. Answer the following:**[8 x 1 = 8]**

43) The length of a rectangle is 10 m more than its breadth. If the perimeter of rectangle is 80 m, find the dimensions of the rectangle.

Ans: _____

44) A sum of Rs.2700 is to be given in the form of 63 prizes. If the prizes are of either Rs.100 or Rs.25, find the number of prizes of each type.

Ans: _____

45) In a class of 42 students, the number of boys is $\frac{2}{5}$ of the girls. Find the number of boys and girls in the class.

Ans: _____

46) My mother is 12 years more than twice my age. After 8 years, my mother's age will be 20 years less than three times my age. Find my age and my mother's age.

Ans: _____

47) In an isosceles triangle, the base angles are equal and the vertex angle is 80° . Find the measure of the base angles.

Ans: _____

48) The angular elevation of a point on the ground to the top of a tree is 30° . If the tree is 90 meter far from the point on the ground, find the height of the tree.

Ans: _____

49) The shade of a building becomes 20 meter when the elevation of the sun is 45° . What is the height of the building?

Ans: _____

50) Find the value of k so that $(x - 3)$ is a factor of $3x^2 + 11x + k$

Ans: _____

*** * * BEST OF LUCK * * ***

**IIT Foundation (Test - 01)****CLASS-VIII (MATHEMATICS)****Total Marks****50****Name :** _____**Roll No :** _____ **Sec :** _____**I. Choose the correct answer:****[20 x 1 = 20]**

- 1) The sum of first n natural numbers is _____.
(a) $n(n+1)$ (b) $\frac{n(n+1)}{2}$ (c) $\frac{n(n+1)}{3}$ (d) None of these
- 2) Any number that can be expressed as a ratio of two integers is called a _____ number.
(a) Natural (b) whole (c) rational (d) None of these
- 3) A complex numbers is a combination of a real number and an _____ number.
(a) Imaginary (b) $\sqrt{3}$ (c) odd (d) None of these
- 4) The value of $\left(\frac{2}{5}\right)^{-3}$ is
(a) $\frac{-8}{125}$ (b) $\frac{25}{4}$ (c) $\frac{125}{8}$ (d) None of these
- 5) The value of $\left\{\left(\frac{4}{-3}\right)^{-3}\right\}^2$ is
(a) $-\frac{3}{4}$ (b) $\frac{3}{4}$ (c) $\frac{729}{4096}$ (d) None of these
- 6) Simplify: $\left(\frac{1}{2}\right)^{-2} + \left(\frac{2}{3}\right)^{-2} + \left(\frac{3}{4}\right)^{-2}$
(a) $\frac{289}{36}$ (b) $\frac{241}{36}$ (c) $\frac{27}{4}$ (d) None of these
- 7) $\left(\frac{1}{3}\right)^{-3} - \left(\frac{1}{2}\right)^{-3} \div \left(\frac{1}{4}\right)^{-3} = ?$
(a) $\frac{215}{8}$ (b) $\frac{27}{16}$ (c) $\frac{64}{19}$ (d) None of these

- 8) In the product of a constant and a variable, each is called the _____ of the other.
 (a) Constant (b) Variable (c) Coefficient (d) None of these
- 9) A symbol which takes on various numerical values is called a _____.
 (a) Constant (b) Variable (c) Coefficient (d) None of these
- 10) Two expressions combined with _____ symbol is called an equation.
 (a) + (b) - (c) = (d) None of these
- 11) A _____ may contain more than 5 terms.
 (a) Binomial (b) Multinomial (c) Monomial (d) None of these
- 12) $3x - 4x^2 + 1$ is a _____.
 (a) Binomial (b) Trinomial (c) Monomial (d) None of these
- 13) The degree of the expression $3x^2 + 4x^3 - 1$ is _____.
 (a) 2 (b) 3 (c) 4 (d) None of these
- 14) Any expression having the non-negative integral powers for the variables is known as a _____.
 (a) Equation (b) Polynomial (c) Variable (d) None of these
- 15) The value of $(-3)^{-4}$ is _____.
 (a) 12 (b) 81 (c) $\frac{1}{81}$ (d) None of these
- 16) Which of the following numbers is divisible by 23?
 (a) $22! + 1$ (b) $22! - 1$ (c) $21! + 2$ (d) None of these
- 17) Let $N = 10^3 + 10^4 + 10^5 + 10^6 + 10^7 + 10^8 + 10^9$. The sum of the digits of N is:
 (a) 12 (b) 7 (c) 6 (d) None of these
- 18) The expression $333^{555} + 555^{333}$ is divisible by:
 (a) 2 (b) 3 (c) 37 (d) None of these
- 19) The value of $(1.00008)^{12500}$ is _____.
 (a) < 1 (b) > 1 (c) > 2 (d) None of these
- 20) What is the remainder when $1923^{1924 \cdot 1925}$ is divided by 1924?
 (a) 1922 (b) 1923 (c) 1 (d) None of these

II. Fill in the blanks:

[5 x 1 = 5]

- 21) The ratio of $\sin \theta$ and $\cos \theta$ is equal to _____.
- 22) The opposite of $\tan \theta$ is the ratio of $\cos \theta$ and _____.
- 23) If $\sin \theta$ is equal to $\cos \theta$ then the value of $\sec \theta$ is _____.
- 24) If the value of $\tan \theta = 1$ then the value of $\sec \theta$ is _____.
- 25) In a right angled triangle, the _____ is the biggest side.

III. Simplify the following:

[5 x 1 = 5]

- 26) $[(2^3)^2]^5$ 27) $(3^3)^5 \times (3^2)^{-5} \times 3^0$ 28) $(2^8)^{-2} \times (16^2)^5 \times 4^{-4}$
- 29) $\frac{3p^2 - 15p^3q}{12p^2q}$ 30) $\frac{6m-3}{2mn} + \frac{4m^2-1}{8m^2}$

IV. Match the following:

[5 x 1 = 5]

- 31) $\sin 45$ [] a) Not defined
- 32) $\cos 60$ [] b) $\frac{1}{\sqrt{3}}$
- 33) $\tan 30$ [] c) 1
- 34) $\operatorname{cosec} 90$ [] d) $\frac{1}{\sqrt{2}}$
- 35) $\cot 0$ [] e) $\frac{1}{2}$

V. Solve the following problems:

[7 x 1 = 7]

- 36) $2(x - 2) - 5(x - 5) = 4(x - 8) - 2(x - 2)$ Ans: _____
- 37) $\frac{2-y}{y+7} = \frac{3}{5}$ Ans: _____
- 38) $\frac{2x}{3} - \frac{3x}{5} = 8$ Ans: _____
- 39) Multiply $(6xy + 4xz)$, $(2xy - 2xz + x)$ Ans: _____
- 40) Multiply $(x + 2y^2 + 3z)$, $(2x^2 + 2y + z)$ Ans: _____
- 41) Divide $(9x^2 + 12x + 3) / (3x + 3)$ Ans: _____
- 42) Divide $(27x^3 + 8y^3 + z^3 - 18xyz) / (3x + 2y + z)$ Ans: _____