Ramakrishna Vivekananda Mission

Annual Examination (Sample Paper)

(English Medium)

Class-IX

TIME SUB-Mathematics Full Marks-90

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1. Select the correct option 1x14

I. The number $\sqrt{7}$

a. Lies between 1 and 2
b. Lies between 2 and 3
c. Lies between 3 and 4
d. Lies between 6 and 7

II. In which quadrant does the point (2,-4) lies

a. 1^{st}
b. 2^{nd}
c. 3^{rd}
d. 4^{th}

III. The degree of the polynomial $x^5+2x^3+3x^2+x$ is

a. 5
b. 3
c. 2
d. 1

IV. The value of $\log_2 16$ is

a. 1
b. 3
c. 2
d. 4

V. The value of $(\sqrt[5]{8})^{5/2} \times (16)^{-3/2}$ is

a. 4
b. 3
c. 2
d. None of these

VI. There is a rebate of 15% if electric bills are paid in time. A man got rebate of Rs. 54 by paying bill in time. What was his electric bill?

a. Rs.360
b. Rs.460
c. Rs.380
d. Rs.480

VII. Find such value of m for which
The following equation $mx - 3y - 1 = 0$
$(4-m)x - y + 1 = 0$ cannot have any solution

a. 1,3
b. 2,4
c. 1,4
d. 3,2

VIII. Percentage frequency equal to

a. $\frac{Class\ frequency}{Total\ frequency}$x100

b. $\frac{Class\ frequency}{Class\ interval}$x100

c. $\frac{Range}{Total\ frequency}$x100

d. None of these

IX. The range of the data
2, 4, 8, 3, 5, 7, 2, 6, 9 is

a. 9
b. 8
c. 2
d. 7

X. O is any point inside the parallelogram ABCD. If $\Delta AOB + \Delta COD = 16$ cm² then the area of the shape of parallelogram ABCD is

a. 8cm²
b. 4cm²
c. 32cm²
d. 64cm²

XI. The graph of the equation 2x+3 = 0 is

a. Parallel to x-axis
b. Parallel to y-axis
c. Passing through the origin
d. None of the above

XII. (7,-5) , (-2,5), (4,6) are the vertices of a triangle. The co-ordinate of centroid of this

a. (3,-2)
b. (2,3)
c. (3,2)
d. (2,-3)

XIII. A circular ring is 5cm wide. The difference of outer and inner radius is

a. 5cm
b. 5/2cm
c. 10cm
d. 7.5cm

XIV. If the area of a equilateral triangle is √3 unit² , then the height of the triangle is

a. √3/2 unit
b. √3 unit
c. √3/4 unit
d. None of these

2. Answer the following question 2x13=26

i. Find two rational numbers in between 1/5 and 1/4

ii. A commodity is sold at Rs.480 with loss of 20% on selling price. What is the cost price of the commodity?

iii. Simplify $\{(125)^{-2}x(16)^{-3/2}\}^{-1/6}$

iv. Find the distance of the point (6,-8) from x-axis and y-axis

v. Find the remainder if we divided $(x^3 - 6x^2 + 13x + 60)$ by (x-1)

vi. Show that (2,2) , (-2,2) and $(-2\sqrt{3},2\sqrt{3})$ are the co-ordinate of the vertex of an equilateral triangle.

vii. In a rhombus ABCD, AB=4cm and $\angle BCD = 60^{\circ}$. Find the length of diagonal BD.

viii. The perimeter and the area of a rectangle are 34cm and 60cm² respectively. Find the length of its diagonal.

ix. A square drawn on height of equilateral triangle. What is the ratio of area of triangle and square?

x. In a ΔABC the medians BE and CF intersects at the point G. The midpoints of BG and CG are P and Q. If PQ =3 cm. Find the length of BC.

xi. In a continuous frequency distribution table mid-point of a class is 42 and class size is 10. Write upper and lower limit.

xii. State remainder theorem *(only statement)*

xiii. Write the class boundaries of following class limit

60-69	70-79	80-89	90-99

3. Mr. Bean bought a table and a chair at Rs.3000 in his shop. He sold the table at 15% profit and chair at 10%loss and he made a profit of 8⅓ % on total cost price. Let us calculate the cost price of chair and table

or 4

Find $\sqrt{11}$ upto 3 decimal place and also say whether it is rational or irrational .

4. If $f(x) = \frac{a(x-b)}{a-b} + \frac{b(x-a)}{b-a}$ then prove that f(a)+f(b) = f(a+b) 3

5. Resolved into factors (any one) 3

i. $1+8x^3+18xy-27y^3$

ii. $2(a^2+\frac{1}{a2}) - (a - \frac{1}{a}) - 7$

6. Draw a graph of following equations and solve

4x-y = 3

2x + 3y = 5

or 4

At present my uncle is 16 years older than me. 8 years later he will be 2times of my age. Find the present age of both.

7. Solve (by any method)

$\frac{6}{x}+\frac{2}{y}=5$

$\frac{8}{3}-\frac{3}{y}=1$

or 3

$x + y = a + b$

$ax – by = a^2-b^2$

8. Solve $2^{5x+4}+2^9 = 2^{10}$ 3

9. Show that

If $\frac{logx}{y-z}=\frac{logy}{z-x}=\frac{logz}{x-y}$ then $x^x .y^y .z^z =1$ 3

10. If a=999, b=998, c=997 then find the value of $a^3+b^3+c^3-3abc$. 3

11. Observe the following cumulative frequency distribution table and construct a frequency distribution table:

4

Classes	Below 10	Below 20	Below 30	Below 40	Below 50	Below 60
The number of Student	17	22	29	37	50	60

12. Prove that the three medians of a triangle are concurrent. 4

or

Prove that the area of a triangular fields being on the same base and same height is equal

13. AB and CD are two diameters of any circle. Prove the ACBD is a rectangle.

or

3

ABC is a triangle and its circumcentre is O. Prove that $\angle BOC = 2\angle BAC$

14. Draw a square with side 5cm. Now draw a parallelogram with equal area of square and one angle of this parallelogram is 60˚. 4

15. In ΔABC , $A(-1,3); B(1,-1) and\ C(5,1)$. Find the length of the median AD.

or 3

If the three points (a ,0) ; (0,b) and (1,1) are collinear then prove that

$\frac{1}{a}+\frac{1}{b}=1$

16. Answer the following (Any two) 3x2=6

i. If the perimeter isosceles right angle triangle is $(\sqrt{2}+1)cm$. Calculate the hypotenuse and area of
Triangle

ii. There is circular ring made of iron sheet with inner and outer radius 18cm and 32cm respectively Calculate how much iron sheet are there

iii. The measure of two diagonals of a rhombus are 15m and 20m. Calculate its perimeter, area and height.

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