ST. JOSEPH'S COLLEGE, PRAYAGRAJ
FIRST UNIT TEST- MAY 2024
CLASS – IX

Time: 1½ Hrs   SUBJECT- MATHEMATICS   Max. Marks: 30

(Candidates are allowed additional **10 minutes** for only reading the paper.
They must **NOT** start writing during this time.)

SECTION A [6 x 1 = 6]

Q 1. Expand $\left(2x + \frac{2}{x}\right)^2$

Q 2. Find the value of $\frac{103^3 + 3^3}{103 \times 103 - 103 \times 3 + 3 \times 3}$

Q 3. Factorise: $4x^2 - 25y^2$

Q 4. If $a + b = 7$ and $ab = 2$, find the value of $a^2 + b^2$

Q 5. If $\frac{x}{y} + \frac{y}{x} = 1$, x & $y \neq 0$, then find the value of $x^3 + y^3$

Q 6. Evaluate: $(1076)^2 - (1075)^2$

SECTION B [6 x 2 = 12]

Q 7. Factorise: $32x^4 - 162y^4$

Q 8. Find the coefficient of p^2 and p in $(p - 3)(p - 4)(p - 5)$

Q 9. If $x + 2y - 3z = 0$; prove that $x^2 - 4y^2 + 9z^2 = 6xz$

Q 10. Simplify using suitable identity: $(5a + 4b + 3c)(5a - 4b - 3c)$

Q 11. Find the value of $(10.3)^3$ using suitable identity

Q 12. If $a^2 + b^2 + c^2 = 100$ and $ab + bc + ca = 22$, find the value of $(a + b + c)$

SECTION C [4 x 3 = 12]

Q 13. Find the value of $(7x + 3y)^3 - (7x - 3y)^3$

Q 14. Factorise: $4x^2 - y^2 - 3xy + 2x - 2y$

Q 15. If $x^2 - 6x + 1 = 0$, find the values of

    i. $x + \frac{1}{x}$

    ii. $x^2 + \frac{1}{x^2}$

    iii. $x^3 + \frac{1}{x^3}$

Q 16. Factorise: $4x^4 + y^4 + 3x^2y^2$

*******************************ALL THE BEST*************************