DELHI PUBLIC SCHOOL NEWTOWN
SESSION 2022-23
MONDAY TEST

CLASS : IX **FULL MARKS: 40**
SUBJECT: MATHEMATICS **DATE: 24.06.22**

General Instructions:

- **The paper consists of two printed pages.**
- **All questions are compulsory.**
- **Copy the question number carefully before answering the questions.**

SECTION: A

1. i) Every rational number is a **[5× 1= 5]**
a) a natural number b) an integer c) a real number d) a whole number

ii) The CI on ₹ 1000 at 10% p.a. compounded annually for 2 years is :
a) ₹ 190 b) ₹ 200 c) ₹ 210 d) ₹ 1210

iii) If $x + \frac{1}{x} = 2$, then $x^2 + (\frac{1}{x})^2 =$

a) 4 b) 2 c) 0 d) none of these

iv) Which of the following has terminating decimal representation?
a) $\frac{3}{7}$ b) $\frac{3}{5}$ c) $\frac{1}{3}$ d) $\frac{3}{11}$

v) What should be added to $x^2 + 8x$ to make it a perfect square?

(a) 1 b) 2 c) 8 d) 16

SECTION: B

2. At what rate percent per annum compound interest will ₹ 5000 amounts to ₹ 5832 in 2 years? **[4]**

3. $\{(7 + \sqrt{5}) \div (7 - \sqrt{5})\} - \{(7 - \sqrt{5}) \div (7 + \sqrt{5})\} = a + \frac{7}{11} b\sqrt{5}$, Find the value of a and b. **[4]**

4. The value of a machine, purchased two years ago, depreciates at an annual rate of 10% .If its present value is ₹ 97200, find :
i)its value after 2 years ii) its value when it was purchased [4]

5.a) Expand $(2x – y – 3z)^2$

b) If $a^2 – 3a -1 = 0$, find the value of $a^2 + (\frac{1}{a})^2$. [3 + 3= 6]

6. Prove that $\sqrt{5}$ is an irrational number by the method of contradiction. [4]

7. Express the following numbers in the form of $\frac{p}{q}$, where p and q are both integers and $q \neq 0$ i) $0.00\bar{1}$ ii) $0.1\overline{34}$ [4]

8. Find $x^3 + (\frac{1}{x})^3$, if $x + \frac{1}{x} = 5$ [4]

9. The difference between the CI and SI on ₹ 7500 for 2 years is ₹ 12 at the same rate of interest per annum. Find :

i) the rate of interest

ii) the CI earned in second year. [5]