DELHI PUBLIC SCHOOL NEWTOWN
SESSION 2024-25
MONDAY TEST

CLASS: IX **FULLMARKS: 40**
SUBJECT: MATHEMATICS **DATE:18.06.24**

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. Choose the correct option **[1× 5 = 5]**

i) If $a + b = 10$ and $ab = 21$ then, the value of $a^2 + b^2$ is:

a) 37 **b) 58** **c) 42** **d) 100**

ii) Among the given numbers the irrational number is:

a) √23 **b) √225** **c) 0.3796** **d) 7.478478….**

iii) The term to be added to $9x^2 + 36y^2 + 10xy$ to make it a perfect square trinomial is:

a) 4xy **b)16xy** **c) -12 xy** **d) 26 xy**

iv) The value of $8^3 - 20^3 + 12^3$ is:

a) 5550 **b) 7650** **c) - 5760** **d) - 5070**

v) Assertion (A): Compound interest is equal to simple interest for the period of 1 year but it is always less than simple interest for more than 1 year. (assume interest is calculated yearly on the same amount with same rate of interest in both CI and SI).

Reason (R): The compound interest for an amount depends on both Principal and interest gained over periods.

a) (A) is true but (R) is false **b) (A) is false but (R) is true**
c) Both (A) and (R) are true **d) Both (A) and (R) are false**

SECTION: B

2. Factorise: **[3+3]**

i) $35y^2 + 13y - 12$

ii) $a(a+b)^3 - 4a^2b(a + b)$

3. By using suitable algebraic identities, evaluate the following: $(110)^3$ **[3]**

4. At what rate per cent compound interest, does a sum of money become 1.44 times of itself in 2 years? (interest compounded annually) **[3]**

5. Insert three rational numbers between $\frac{1}{12}$ and $\frac{3}{5}$. **[3]**

6. A principal of ₹6400 is kept in a bank and the rate of interest is 5% p.a compounded half-yearly.

i) Calculate the amount when the duration is 1 year.
ii) What will be the amount after $1\frac{1}{2}$ years?
iii) Calculate the interest after $1\frac{1}{2}$ years. **[5]**

7. If $x + \frac{1}{x} = 6$, then find the value of a) $x^2 + \frac{1}{x^2}$ b) $x^4 + \frac{1}{x^4}$ **[5]**

8. Evaluate: $\frac{4}{1+2\sqrt{3}} - \frac{6+\sqrt{3}}{11\sqrt{3}}$ **[5]**

9. Present value of an article is ₹45000. The value of the article decreases for the first two years at the rate of 10% per year and then in the third year it increases by 10%. Find the value of the article after 3 years. By how much has the value increased or decreased? **[5]**