STD 9 Maths
Number system (DPP-5)

Total Marks : 30

➤ **Choose the right answer from the given options. [1 Marks Each]** **[10]**

1. Which one of the following is not equal to $\left(\frac{100}{9}\right)^{-\frac{3}{2}}$?

   (A) $\left(\frac{9}{100}\right)^{\frac{3}{2}}$ (B) $\left(\frac{1}{\frac{100}{9}}\right)^{\frac{3}{2}}$

   (C) $\frac{3}{10} \times \frac{3}{10} \times \frac{3}{10}$ (D) $\sqrt{\frac{100}{9}} \times \sqrt{\frac{100}{9}} \times \sqrt{\frac{100}{9}}$

2. If $x = \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$ and $y = \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$, then $x^2 + xy + y^2 =$

   (A) 101 (B) 99 (C) 98 (D) 102

3. If $\left(\frac{2}{3}\right)^x \left(\frac{3}{2}\right)^{2x} = \frac{81}{16}$ then x = ?

   (A) 1 (B) 2 (C) 3 (D) 4

4. Value of $\sqrt[4]{(81)^{-2}}$ is:

   (A) $\frac{1}{81}$ (B) $\frac{1}{3}$ (C) $\frac{1}{9}$ (D) 9

5. If $\frac{3-\sqrt{5}}{3+2\sqrt{5}} = a\sqrt{5} - \frac{19}{11}b$, than the value of 'b' is:

   (A) -1 (B) 2 (C) 1 (D) 3

6. Which of the following statements is true?

   (A) Product of two irrational numbers is always irrational.
   (B) Product of a rational and an irrational number is always irrational.
   (C) Sum of two irrational numbers can never be irrational.
   (D) Sum of an integer and a rational number can never be an integer.

7. When simplified $\left(x^{-1} + y^{-1}\right)^{-1}$ is equal to:

   (A) xy (B) $x + y$ (C) $\frac{xy}{x+y}$ (D) $\frac{x+y}{xy}$

8. If $x = \frac{\sqrt{5}+\sqrt{3}}{\sqrt{5}-\sqrt{3}}$ and $y = \frac{\sqrt{5}-\sqrt{3}}{\sqrt{5}+\sqrt{3}}$, then $x + y + xy =$

   (A) 9 (B) 5 (C) 17 (D) 7

9. Write the correct answer in the following:
   Value of $\sqrt[4]{(81)^{-2}}$ is.

   (A) $\frac{1}{9}$ (B) $\frac{1}{3}$ (C) 9 (D) $\frac{1}{81}$

10. The sum of $0.\overline{3}$ and $0.\overline{4}$ is:

    (A) $\frac{7}{9}$ (B) $\frac{7}{11}$ (C) $\frac{7}{99}$ (D) $\frac{7}{10}$

➤ **Answer the following short questions. [2 Marks Each]** **[8]**

11. Represent $\sqrt{5}$ on the number line.

12. Find rational numbers a and b such that:
    $\frac{5+2\sqrt{3}}{7+4\sqrt{3}} = a + b\sqrt{3}$

13. It being given that $\sqrt{3} = 1.732, \sqrt{5} = 2.236, \sqrt{6} = 2.449$ and $\sqrt{10} = 3.162$, find to three places of decimal, the value of the following:
    $\frac{3+\sqrt{5}}{3-\sqrt{5}}$

14. Simplify by rationalising the denominator:
    $\frac{7\sqrt{3}-5\sqrt{2}}{\sqrt{48}+\sqrt{18}}$

➤ **Answer the following questions. [3 Marks Each]** **[12]**

15. Represent $\sqrt{10.5}$ on the number line.

16. Simplify:

$\frac{2\sqrt{6}}{\sqrt{2}+\sqrt{3}} + \frac{6\sqrt{2}}{\sqrt{6}+\sqrt{3}} - \frac{8\sqrt{3}}{\sqrt{6}+\sqrt{2}}$

17. Find rational numbers a and b such that:

$\frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}} = a + b\sqrt{6}$

18. Simplify $\frac{\sqrt{13}-\sqrt{11}}{\sqrt{13}+\sqrt{11}} + \frac{\sqrt{13}+\sqrt{11}}{\sqrt{13}-\sqrt{11}}$

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