CLASS IX

CHAPTER 1

NUMBER SYSTEM

VERY SHORT AND SHORT ANSWER TYPE QUESTIONS

Q1. Find x if $27^x = 9/3^x$

Q2. Solve $(\sqrt{5})^7 \div (\sqrt{5})^5 = 5^x$.

Q3. Evaluate $\sqrt[3]{4^2} . \sqrt[3]{8^2}$.

Q4. Find $\frac{1}{x}$ with rational denominator if $x = \sqrt{5} + 2$.

Q5. Arrange the following in ascending order of magnitude : $\sqrt[3]{3}, \sqrt[3]{4}, \sqrt[5]{2}$

Q6. Arrange the following in descending order of magnitude : $\sqrt[8]{90}, \sqrt[4]{10}, \sqrt{6}$

Q7. Find the decimal representation of $2\frac{5}{12}$ and state its type.

Q8. Evaluate $\sqrt[4]{256} + \sqrt[3]{216} - \sqrt[6]{64}$

Q9. Simplify $\left(\sqrt[3]{\frac{27}{125}}\right)^{-2} \div \left(\sqrt[3]{\frac{27}{125}}\right)^{-4}$

Q10. Express each of the following recurring decimals as a rational number

i). $0.\overline{5}$

ii). $0.\overline{13}$

iii).$0.\overline{341}$

Q11. Add $2\sqrt{3} + \sqrt{5}$ and $\sqrt{3} - 3\sqrt{5}$

Q12. Divide $12\sqrt{8}$ by $2\sqrt{2}$

LONG AND VERY LONG ANSWER TYPE QUESTIONS

Q13. If $x = 2 + \sqrt{3}$, find the value of $(x - \frac{1}{x})^2$

Q14. If $a = 1 - \sqrt{5}$, find the value of $a^2 - 1/a^2$

Q15. Simplify:

$$\frac{6}{2\sqrt{3} - \sqrt{6}} + \frac{\sqrt{6}}{\sqrt{3} + \sqrt{2}} - \frac{4\sqrt{3}}{\sqrt{6} - \sqrt{2}}$$

Q16. Express each of the following recurring decimals as a rational number p/q

i. $0.1\overline{27}$

ii. $0.3\overline{578}$

iii. $0.7\overline{435}$

Q17. Show that:

$$\frac{1}{3 - \sqrt{8}} - \frac{1}{\sqrt{8} - \sqrt{7}} + \frac{1}{\sqrt{7} - \sqrt{6}} - \frac{1}{\sqrt{6} - \sqrt{5}} + \frac{1}{\sqrt{5} - 2} = 5$$

Q18. If a,b and c are rational numbers, find their values in each of the following

i. $\frac{5+2\sqrt{3}}{7+4\sqrt{3}} = a + b\sqrt{3}$

ii. $\frac{\sqrt{2}+\sqrt{3}}{\sqrt{18}-\sqrt{12}} = a - b\sqrt{6} + c\sqrt{3}$

Q19. Simplify:

$\sqrt[4]{81} - 8\sqrt[3]{216} + 15\sqrt[5]{32} + \sqrt{225}$

Q20.Simplify

i). $\sqrt{3\ X\ 5^{-3}} \div \sqrt[3]{3^{-1}}.\sqrt{5}\ X\ \sqrt[6]{3X\ 5^4}$

ii). $\frac{25^{\frac{3}{2}}\ X\ 243^{\frac{5}{3}}}{16^{\frac{5}{4}}\ X\ 8^{\frac{4}{3}}}$

iii). $(\frac{81}{16})^{\frac{-3}{4}}\ X\ \left[(\frac{25}{9})^{\frac{-3}{2}} \div (\frac{5}{2})^{-3}\right]$

ANSWERS:

1. x= ½
2. x=1
3. $2^{\frac{3}{8}}$
4. $\sqrt{5} - 2$
5. $\sqrt[5]{2}, \sqrt[3]{3}, \sqrt[3]{4}$
6. $\sqrt{6}, \sqrt[4]{10}, \sqrt[8]{90}$
7. 2.416 non terminating recurring decimal expansion , a rational number
8. 8
9. 9/25
10. 5/9
11. 13/99
12. 341/999
13. 12
14. $-4\sqrt{5}$
15. 0
16. i). 63/495 ii). 7015/1998 iii). 7361/9900

18. i). a =11 , b = -6

ii). a =12, b =2, c = 4

19.0

20. i). $3.5^{\frac{-4}{3}}$

ii). $5^3.7^5/2^9$

iii). 1