

CLASS 09 - MATHEMATICS

Chap1-Number Systems-Practice Questions

- Which of the following is a rational number? [1]
 - π
 - $2\sqrt{3}$
 - 0
 - $1 + \sqrt{3}$
- If x is a positive real number and $x^2 = 2$, then $x^3 =$ [1]
 - $\sqrt{2}$
 - $3\sqrt{2}$
 - $2\sqrt{2}$
 - 4
- If $a = 2$, $b = 3$, then the value of $(a^b + b^a)^{-1}$ is [1]
 - $\frac{1}{15}$
 - $\frac{1}{18}$
 - $\frac{1}{17}$
 - $\frac{1}{16}$
- If $\sqrt{2} = 1.41$ then $\frac{1}{\sqrt{2}} = ?$ [1]
 - 0.705
 - 7.05
 - 0.75
 - 0.075
- If $x = \frac{2}{3+\sqrt{7}}$, then $(x - 3)^2$ [1]
 - 7
 - 3
 - 6
 - 1
- The simplest rationalising factor of $\sqrt{3} + \sqrt{5}$, is [1]
 - $\sqrt{3} + \sqrt{5}$
 - $\sqrt{3} - \sqrt{5}$
 - $\sqrt{3} - 5$
 - $3 - \sqrt{5}$
- $\sqrt[5]{6} \times \sqrt[5]{6}$ is equal to [1]
 - $\sqrt[5]{36}$
 - $\sqrt[5]{6}$
 - $\sqrt[5]{6 \times 0}$
 - $\sqrt[5]{12}$
- The number obtained on rationalising the denominator of $\frac{1}{\sqrt{7}-2}$ is [1]
 - $\frac{\sqrt{7}+2}{45}$
 - $\frac{\sqrt{7}-2}{3}$
 - $\frac{\sqrt{7}+2}{5}$
 - $\frac{\sqrt{7}+2}{3}$
- The value of $x^{p-q} x^{q-r} x^{r-p}$ is equal to [1]
 - x^{pqr}
 - 0
 - x
 - 1
- A rational number between -3 and 3 is [1]
 - 0
 - 3.4

c) 1.101100110001 ...

d) -4.3

11. Given $4725 = 3^3 5^2 7^1$, the value of $2^{-a} 3^b 7^c$ [1]
12. Without actual division, Find the rational number terminating decimal $\frac{11}{24}$ [1]
13. Examine the number rational or irrational: $3 + \sqrt{3}$. [1]
14. Evaluate: $2^{55} \times 2^{60} - 2^{97} \times 2^{18}$ [1]
15. Evaluate: $(25)^{\frac{1}{3}} \times (5)^{\frac{1}{3}}$. [1]
16. Classify the number 0.5918 as rational or irrational with justification. [1]
17. If $x = \sqrt{2} - 1$ then write the value of $\frac{1}{x}$ [1]
18. Give an example of two irrational numbers whose difference is a rational number. [1]
19. Express $3\frac{1}{8}$ in decimal form. [1]
20. For any positive real number x , write the value of $\left\{ (x^a)^b \right\}^{\frac{1}{ab}} \left\{ (x^b)^c \right\}^{\frac{1}{bc}} \left\{ (x^c)^a \right\}^{\frac{1}{ca}}$ [1]
21. Prove that: $\frac{1}{3+\sqrt{7}} + \frac{1}{\sqrt{7}+\sqrt{5}} + \frac{1}{\sqrt{5}+\sqrt{3}} + \frac{1}{\sqrt{3}+1} = 1$. [2]
22. Rationalise the denominator of $\frac{\sqrt{5}+\sqrt{3}}{\sqrt{5}-\sqrt{3}}$. [2]
23. Express $0.\overline{001}$ as a fraction in simplest form. [2]
24. Represent $\sqrt{2.3}$ on the number line. [2]
25. Represent $(1 + \sqrt{9.5})$ on the number line. [2]
26. Simplify: $\left(\frac{32}{243}\right)^{-\frac{4}{5}}$. [2]
27. Simplify $3\sqrt{45} - \sqrt{125} + \sqrt{200} - \sqrt{50}$. [2]
28. Simplify: $\frac{2\sqrt{3}}{3} - \frac{\sqrt{3}}{6}$ [2]
29. Simplify: $64^{-\frac{1}{3}} \left[64^{\frac{1}{3}} - 64^{\frac{2}{3}} \right]$ [2]
30. Write the following in ascending order of magnitude $\sqrt[6]{6}, \sqrt[3]{7}, \sqrt[4]{8}$. [2]
31. Find rational numbers a and b such that $\frac{\sqrt{2}-1}{\sqrt{2}+1} = a + b\sqrt{2}$. [2]
32. Express 0.9999 ... as a fraction in simplest form. [2]
33. Find five rational numbers between $\frac{3}{5}$ and $\frac{2}{3}$ [2]
34. It is given that $\sqrt{3}=1.732, \sqrt{5}=2.236, \sqrt{6}=2.449$ and $\sqrt{10}=3.162$, find upto three places of decimal, $\frac{1+2\sqrt{3}}{2-\sqrt{3}}$. [2]
35. Express $4.\overline{7}$ in the form $\frac{p}{q}$ [2]
36. If $x = \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$, and $y = \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$, then find the value of $x^2 + y^2$. [3]
37. Locate $\sqrt{2}$ on the number line. [3]
38. Rationalise the denominator: $\frac{1}{\sqrt{7}+\sqrt{6}-\sqrt{13}}$ [3]
39. If $a = 2 + \sqrt{3}$, then find the value of $a - \frac{1}{a}$. [3]
40. Find the values of a and b in each of $\frac{3-\sqrt{5}}{3+2\sqrt{5}} = a\sqrt{5} - \frac{19}{11}$ [3]
41. Simplify $3\sqrt{48} - \frac{5}{2}\sqrt{\frac{1}{3}} + 4\sqrt{3}$ [3]
42. Represent $\sqrt{9.3}$ on the number line. [3]
43. Simplify the following by rationalizing the denominator : $\frac{\sqrt{5}-2}{\sqrt{5}+2} - \frac{\sqrt{5}+2}{\sqrt{5}-2}$ [3]
44. Locate $\sqrt{10}$ on the number line. [3]

45. Find the value of $\frac{4}{(216)^{-\frac{2}{3}}} + \frac{1}{(256)^{-\frac{3}{4}}} + \frac{2}{(243)^{-\frac{1}{5}}}$
46. If $a = \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$ and $b = \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$, find the value of $a^2 + b^2 - 5ab$. [4]
47. If $a = 3 + 2\sqrt{2}$, then find the value of: [4]
- i. $a^2 + \frac{1}{a^2}$
- ii. $a^3 + \frac{1}{a^3}$
48. Simplify: $\frac{7\sqrt{3}}{\sqrt{10}+\sqrt{3}} - \frac{2\sqrt{5}}{\sqrt{6}+\sqrt{5}} - \frac{3\sqrt{2}}{\sqrt{15}+3\sqrt{2}}$. [4]
49. If $x = 2 - \sqrt{3}$, find the value of $(x - \frac{1}{x})^3$. [4]
50. Express $0.\overline{6} + 0.\overline{7} + 0.\overline{47}$ in the form $\frac{p}{q}$, where p and q are integers and $q \neq 0$. [4]