MCQs - TERM 1

IX

1. Number System

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1) Every rational number is
(a) a natural number (b) an integer
(c) a real number (d) a whole number.

Soln:- a real number (c)

2) Decimal representation of a rational number cannot be
(a) terminating (b) non-terminating
(c) non-terminating, repeating (d) non-terminating non-repeating

Soln:- The decimal expansion of a rational number is either terminating or non-terminating, repeating. So it cannot be non-terminating, non-repeating (d)

3) π is an irrational number because its decimal expansion is
(a) terminating (b) non-terminating
(c) non-terminating repeating (d) non-terminating non-repeating

Soln:- The decimal expansion of an irrational number is non-terminating, non-repeating (d)

4) Every point on a number line represents
(a) a unique real number (b) a natural number
(c) a rational number (d) an irrational number

Soln:- a unique real number (a)

5) Which of the following is a rational number ?
(a) $-\frac{2}{3}$ (b) $-\frac{1}{\sqrt{5}}$ (c) $\frac{13}{\sqrt{5}}$ (d) $\frac{\sqrt{2}}{3}$

Soln:- $-\frac{2}{3}$ (a) since $\sqrt{5}$ and $\sqrt{2}$ are irrational numbers.

6) Which of the following is irrational ?
(a) 0.15 (b) $0.15\overline{16}$ (c) $0.\overline{1516}$ (d) 0.501500150015...

Soln:- 0.501500150015... (d) since the decimal expansion of an irrational number is non-terminating non-repeating

7) A rational number equivalent to $\frac{3}{17}$ is
(a) $\frac{6}{17}$ (b) $\frac{6}{34}$ (c) $\frac{17}{3}$ (d) $\frac{3}{34}$

Soln:- $\frac{3\times2}{17\times2} = \frac{6}{34}$ (b)

8) A rational number between 2 and 3 is
(a) 2.010010001... (b) $\sqrt{6}$ (c) $\frac{5}{2}$ (d) $4-\sqrt{2}$

Soln:- $\frac{5}{2} = 2.5$ (c) since all other given numbers are irrational.

9) Four rational numbers between 3 and 4 are
(a) 3.1, 3.2, 3.8, 3.9 (b) $\frac{3}{5}, \frac{4}{5}, 1, \frac{6}{5}$
(c) 3.1, 3.2, 4.1, 4.2 (d) $\frac{13}{5}, \frac{14}{5}, \frac{16}{5}, \frac{17}{5}$

Soln:- 3.1, 3.2, 3.8, 3.9 (a)

10) The smallest irrational number to be added to $3+\sqrt{2}$ to get a rational number
(a) $-\sqrt{2}$ (b) $3-\sqrt{2}$ (c) $\sqrt{2}-3$ (d) $\sqrt{3}+2$

Soln:- $-\sqrt{2}$ (a). since $3+\sqrt{2}+(-\sqrt{2}) = 3$, a rational number.

11) Rational number $\frac{3}{40}$ is equal to.
(a) 0.75 (b) 0.12 (c) 0.012 (d) 0.075

Soln:- $\frac{3 \times 25}{40 \times 25} = \frac{75}{1000} = 0.075$ (d)

12) A rational number between 3 and 4 is
(a) $\frac{3}{2}$ (b) $\frac{4}{3}$ (c) $\frac{7}{2}$ (d) $\frac{7}{4}$

Soln:- $\frac{3+4}{2} = \frac{7}{2}$ (c)

13) A rational number between $\frac{3}{5}$ and $\frac{4}{5}$ is
(a) $\frac{7}{5}$ (b) $\frac{7}{10}$ (c) $\frac{3}{10}$ (d) $\frac{4}{10}$

Soln:- $\frac{\frac{3}{5}+\frac{4}{5}}{2} = \frac{1}{2} \times \frac{7}{5} = \frac{7}{10}$ (b)

14) A rational number between $\frac{1}{2}$ and $\frac{3}{4}$ is
(a) $\frac{2}{5}$ (b) $\frac{5}{8}$ (c) $\frac{4}{3}$ (d) $\frac{1}{4}$

Soln:- $\frac{1}{2}\left[\frac{1^{\times 2}}{2_{\times 2}}+\frac{3}{4}\right] = \frac{1}{2}\left[\frac{2+3}{4}\right] = \frac{1}{2}\times\frac{5}{4} = \frac{5}{8}$ (b)

15) Which one of the following is not a rational number:
(a) $\sqrt{2}$ (b) 0 (c) $\sqrt{4}$ (d) $\sqrt{16}$

Soln:- $\sqrt{2}$ (a) since $0, \sqrt{4}=2, \sqrt{16}=4$ are rational numbers.

16) Which one of the following is an irrational number:
(a) $\sqrt{4}$ (b) $3\sqrt{8}$ (c) $\sqrt{100}$ (d) $-\sqrt{0.64}$

Soln:- $3\sqrt{8} = 3\times 2\sqrt{2} = 6\sqrt{2}$ (b) since $\sqrt{4}=2, \sqrt{100}=10, -\sqrt{0.64}=-0.8$ are rational numbers.

17) Decimal representation of $\frac{1}{5}$ is:
(a) 0.2 (b) 0.5 (c) 0.02 (d) 0.002

Soln:- $\frac{1^{\times 2}}{5_{\times 2}} = \frac{2}{10} = 0.2$ (a)

18) $3\frac{3}{8}$ in decimal form is
(a) 3.35 (b) 3.375 (c) 33.75 (d) 337.5

Soln:- $3\frac{3}{8} = \frac{27^{\times 125}}{8_{\times 125}} = \frac{3375}{1000} = 3.375$ (b)

19) $\frac{5}{6}$ in the decimal form is:
(a) $0.8\bar{3}$ (b) $0.8\overline{33}$ (c) $0.6\bar{3}$ (d) $0.6\overline{33}$

Soln:- $\frac{1}{6} = 0.1\bar{6}$

$\therefore \frac{5}{6} = 5\times 0.1\bar{6} = 0.8\bar{3}$ (a)

20) Decimal representation of rational number $\frac{8}{27}$ is:
(a) $0.\overline{296}$ (b) $0.29\bar{6}$ (c) $0.2\overline{96}$ (d) 0.296

Soln:- $\frac{8}{27} = 0.\overline{296}$ (a)

$$
\begin{array}{r|l}
 & 0.296296\ldots \\
\hline
27 & 80 \\
 & 54 \\
\hline
 & 260 \\
 & 243 \\
\hline
 & 170 \\
 & 162 \\
\hline
 & 80
\end{array}
$$

21) Which one of the following is a rational number: (a) $\sqrt{3}$ (b) $\sqrt{2}$ (c) 0 (d) $\sqrt{5}$

Soln:- 0 (c) since 0 can be written in the form $\frac{p}{q}; p\neq 0$
eg: $-\frac{0}{1}, \frac{0}{2}$ etc.

22) $0.6666\ldots$ in $\frac{p}{q}$ form is:

(a) $\frac{6}{99}$ (b) $\frac{2}{3}$ (c) $\frac{3}{5}$ (d) $\frac{1}{66}$

Soln:- Let $x = 0.\overline{6666}\ldots \rightarrow (1)$

$10x = 6.6666\ldots \rightarrow (2)$

(2)−(1), $9x = 6$

$x = \frac{6}{9} = \frac{2}{3}$ (b)

23) The value of $0.\overline{3}$ in the form $\frac{p}{q}$, where p and q are integers and $q \neq 0$ is

(a) $\frac{33}{100}$ (b) $\frac{3}{10}$ (c) $\frac{1}{3}$ (d) $\frac{3}{100}$

Soln:- Let $x = 0.\overline{3}333\ldots \rightarrow (1)$

$10x = 3.3333\ldots \rightarrow (2)$

(2)−(1), $9x = 3$

$x = \frac{3}{9} = \frac{1}{3}$ (c)

24) $0.3\overline{2}$ expressed in the form $\frac{p}{q}$, where p and q are integers and $q \neq 0$ is

(a) $\frac{8}{25}$ (b) $\frac{29}{90}$ (c) $\frac{32}{99}$ (d) $\frac{32}{199}$

Soln:- Let $x = 0.3\overline{2}222\ldots$

$10x = 3.\overline{2}2222\ldots \rightarrow (1)$

$100x = 32.2222\ldots \rightarrow (2)$

$90x = 29$

$x = \frac{29}{90}$ (b)

25) $0.\overline{437}$ expressed in the form $\frac{p}{q}$, where p and q are integers and $q \neq 0$ is

(a) $\frac{437}{9999}$ (b) $\frac{394}{999}$ (c) $\frac{434}{99}$ (d) $\frac{437}{999}$

Soln:- Let $x = 0.\overline{437}437437\ldots \rightarrow (1)$

$1000x = 437.\overline{437}437437\ldots \rightarrow (2)$

(2)−(1), $999x = 437$

$x = \frac{437}{999}$ (d)

26) Simplest rationalisation factor of $\sqrt[3]{40}$ is
(a) $\sqrt[3]{25}$ (b) $\sqrt[3]{5}$ (c) $\sqrt{40}$ (d) $\sqrt{5}$

Soln:- $\sqrt[3]{40} = \sqrt[3]{2\times2\times2\times5}$

$\therefore$ the rationalisation factor = $\sqrt[3]{25}$

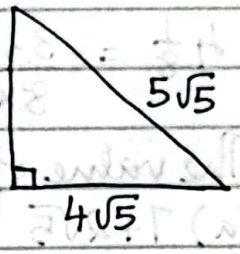
since the factor 5 is not in triplets

2	40
2	20
2	10
	5

27) $2\sqrt{5}+\sqrt{5}$ equals (a) $2\sqrt{10}$ (b) 10 (c) $3\sqrt{5}$ (c) $3\sqrt{10}$

Soln:- $3\sqrt{5}$ (c)

28) The perimeter of the given figure is
(a) $60\sqrt{5}$ (b) $12\sqrt{5}$ (c) $27\sqrt{5}$ (d) $32\sqrt{5}$



Soln:- perimeter = $3\sqrt{5}+4\sqrt{5}+5\sqrt{5}$

$= 12\sqrt{5}$ (b)

29) On simplification of $\left(\frac{2}{3}\sqrt{5}-\frac{1}{2}\sqrt{2}+6\sqrt{11}\right)+\left(\frac{1}{3}\sqrt{5}+\frac{3}{2}\sqrt{2}-\sqrt{11}\right)$, we get

(a) $\sqrt{5}+\sqrt{2}+5\sqrt{11}$ (b) $\frac{\sqrt{5}}{2}+2\sqrt{2}+\sqrt{11}$ (c) $\sqrt{5}+\sqrt{2}+6\sqrt{11}$ (d) $\sqrt{5}+2\sqrt{2}+5\sqrt{11}$

Soln:-

$\sqrt{5}\left(\frac{2}{3}+\frac{1}{3}\right)+\sqrt{2}\left(\frac{3}{2}-\frac{1}{2}\right)+\sqrt{11}(6-1)$

$= \sqrt{5}\times\frac{3}{3}+\sqrt{2}\times\frac{2}{2}+\sqrt{11}\times5 = \sqrt{5}+\sqrt{2}+5\sqrt{11}$ (a)

30) The product of $\sqrt[3]{7}$ and $\sqrt{5}$ is
(a) $\sqrt[3]{35}$ (b) $\sqrt[6]{35}$ (c) $\sqrt[6]{6125}$ (d) $\sqrt[6]{1225}$

Soln:- $\sqrt[3]{7}\times\sqrt{5} = 7^{\frac{1}{3}\times\frac{2}{2}}\times5^{\frac{1}{2}\times\frac{3}{3}}$

$= 7^{\frac{2}{6}}\times5^{\frac{3}{6}} = (7^2)^{\frac{1}{6}}\times(5^3)^{\frac{1}{6}} = (7^2\times5^3)^{\frac{1}{6}}$

$= (49\times125)^{\frac{1}{6}} = (6125)^{\frac{1}{6}} = \sqrt[6]{6125}$ (c)

31) The product of $\frac{1}{6}\sqrt{18}$ and $\frac{1}{3}\sqrt{18}$ is

(a) 1 (b) $\frac{1}{12}$ (c) $\frac{1}{3}$ (d) $\sqrt{2}$

Soln:-

$\frac{1}{6}\sqrt{18}\times\frac{1}{3}\sqrt{18} = \frac{1}{6}\times\frac{1}{3}\times\sqrt{18}\times\sqrt{18} = \frac{1}{18}\times18 = 1$ (a)

32) $\sqrt{5}\times\sqrt{7}\times\sqrt{15}\times\sqrt{21}$ in simplied form is
(a) $\sqrt{105}$ (b) $\sqrt{210}$ (c) 105 (d) 210

Soln:- $\sqrt{5}\times\sqrt{7}\times\sqrt{3}\times\sqrt{5}\times\sqrt{7}\times\sqrt{3} = 5\times7\times3 = 105$ (c)

33) $(3+\sqrt{3})(3-\sqrt{3})$ on simplification becomes equal to
(a) 18 (b) $2\sqrt{3}$ (c) 6 (d) 9

Soln:- $(3+\sqrt{3})(3-\sqrt{3}) = (3)^2-(\sqrt{3})^2$ $[(a+b)(a-b)=a^2-b^2]$
$= 9-3 = 6$ (c)

34) $4\frac{1}{8}$ in decimal form is:
(a) 4.125 (b) $4.\overline{15}$ (c) $4.1\overline{5}$ (d) $0.\overline{415}$

Soln:-
$4\frac{1}{8} = \frac{33\times125}{8\times125} = \frac{4125}{1000} = 4.125$ (a)

35) The value of $(\sqrt{5}+\sqrt{2})^2$ is:
(a) $7+2\sqrt{5}$ (b) $1+5\sqrt{2}$ (c) $7+2\sqrt{10}$ (d) $7-2\sqrt{10}$

Soln:- $(\sqrt{5}+\sqrt{2})^2 = 5+2+2\sqrt{10}$ $[(a+b)^2=a^2+b^2+2ab]$
$= 7+2\sqrt{10}$ (c)

36) The value of $(\sqrt{5}+\sqrt{2})(\sqrt{5}-\sqrt{2})$ is:
(a) 10 (b) 7 (c) 3 (d) $\sqrt{3}$

Soln:- $(\sqrt{5}+\sqrt{2})(\sqrt{5}-\sqrt{2}) = (\sqrt{5})^2-(\sqrt{2})^2 = 5-2 = 3$ (c)

37) The value of $(3+\sqrt{3})(2+\sqrt{2})$ is:
(a) $6+3\sqrt{2}+2\sqrt{3}+\sqrt{6}$ (b) $3+3\sqrt{2}+3\sqrt{3}+6$
(c) $6-3\sqrt{2}-2\sqrt{3}-\sqrt{6}$ (d) $6-3\sqrt{2}+2\sqrt{3}-\sqrt{6}$

Soln:- $(3+\sqrt{3})(2+\sqrt{2}) = 6+3\sqrt{2}+2\sqrt{3}+\sqrt{6}$ (a)

38) The value of $(\sqrt{11}+\sqrt{7})(\sqrt{11}-\sqrt{7})$ is:
(a) 4 (b) -4 (c) 18 (d) -18

Soln:- $(\sqrt{11}+\sqrt{7})(\sqrt{11}-\sqrt{7}) = (\sqrt{11})^2-(\sqrt{7})^2$
$= 11-7 = 4$ (a)

39) The value of $(5+\sqrt{5})(5-\sqrt{5})$ is.
(a) 0 (b) 25 (c) 20 (d) -20

Soln:- $(5+\sqrt{5})(5-\sqrt{5}) = (5)^2-(\sqrt{5})^2 = 25-5 = 20$ (c)

40) On rationalizing the denominator of $\frac{1}{\sqrt{7}}$, we get
(a) 7 (b) $\frac{\sqrt{7}}{7}$ (c) $-\frac{\sqrt{7}}{7}$ (d) $\sqrt{7}$

Soln:- $\frac{1}{\sqrt{7}}\times\frac{\sqrt{7}}{\sqrt{7}} = \frac{\sqrt{7}}{7}$ (b)

41) On rationalizing the denominator of $\frac{1}{\sqrt{7}-\sqrt{6}}$, we get

(a) $\frac{\sqrt{7}+\sqrt{6}}{\sqrt{7}-\sqrt{6}}$ (b) $\frac{\sqrt{7}-\sqrt{6}}{\sqrt{7}+\sqrt{6}}$ (c) $\sqrt{7}+\sqrt{6}$ (d) $\sqrt{7}-\sqrt{6}$

Soln:- $\frac{1\ (\sqrt{7}+\sqrt{6})}{(\sqrt{7}-\sqrt{6})(\sqrt{7}+\sqrt{6})} = \frac{\sqrt{7}+\sqrt{6}}{(\sqrt{7})^2-(\sqrt{6})^2} = \frac{\sqrt{7}+\sqrt{6}}{7-6} = \sqrt{7}+\sqrt{6}$ (c)

42) On rationalizing the denominator of $\frac{1}{\sqrt{5}+\sqrt{2}}$, we get

(a) $\sqrt{5}-\sqrt{2}$ (b) $\sqrt{2}-\sqrt{5}$ (c) $\frac{\sqrt{5}-\sqrt{2}}{3}$ (d) $\frac{\sqrt{2}-\sqrt{5}}{3}$

Soln:- $\frac{1\ (\sqrt{5}-\sqrt{2})}{(\sqrt{5}+\sqrt{2})(\sqrt{5}-\sqrt{2})} = \frac{\sqrt{5}-\sqrt{2}}{(\sqrt{5})^2-(\sqrt{2})^2} = \frac{\sqrt{5}-\sqrt{2}}{5-2} = \frac{\sqrt{5}-\sqrt{2}}{3}$ (c)

43) On rationalizing the denominator of $\frac{1}{\sqrt{7}-2}$, we get

(a) $\sqrt{7}-2$ (b) $\sqrt{7}+2$ (c) $\frac{\sqrt{7}+2}{3}$ (d) $\frac{\sqrt{7}-2}{3}$

Soln:- $\frac{1\ (\sqrt{7}+2)}{(\sqrt{7}-2)(\sqrt{7}+2)} = \frac{\sqrt{7}+2}{(\sqrt{7})^2-(2)^2} = \frac{\sqrt{7}+2}{7-4} = \frac{\sqrt{7}+2}{3}$ (c)

44) The value of $(3+\sqrt{5})^2(3-\sqrt{5})^2$ is

(a) 15 (b) 16 (c) 4 (d) 14

Soln:- $(3+\sqrt{5})^2(3-\sqrt{5})^2 = \left[(3+\sqrt{5})(3-\sqrt{5})\right]^2$

$= \left[3^2-(\sqrt{5})^2\right]^2$

$= (9-5)^2 = 4^2 = 16$ (b)

45) $\sqrt[3]{250} \div \sqrt[3]{10}$ in simplified form is equal to

(a) $\sqrt[3]{25}$ (b) 5 (c) $\sqrt{5}$ (d) $\sqrt[3]{2500}$

Soln:- $\frac{\sqrt[3]{250}}{\sqrt[3]{10}} = \sqrt[3]{\frac{250}{10}} = \sqrt[3]{25}$ (a)

46) $\frac{30}{\sqrt{20}+\sqrt{5}}$ is equal to (a) $\frac{10}{3\sqrt{5}}$ (b) $\frac{30}{\sqrt{5}}$ (c) $\frac{10}{\sqrt{5}}$ (d) $12\sqrt{5}$

Soln:- $\frac{30}{\sqrt{20}+\sqrt{5}} = \frac{30}{2\sqrt{5}+\sqrt{5}} = \frac{\overset{10}{\cancel{30}}}{3\sqrt{5}_{1}}$

$2\,|\,20$

$2\,|\,10$

5

$= \frac{10}{\sqrt{5}}$ (c)

47) $\frac{6}{\sqrt{12}-\sqrt{3}}$ is equal to (a) $\frac{1}{\sqrt{3}}$ (b) $\frac{2}{\sqrt{3}}$ (c) $2\sqrt{3}$ (d) $6\sqrt{3}$

Soln:- $\frac{6}{\sqrt{12}-\sqrt{3}} = \frac{6}{2\sqrt{3}-\sqrt{3}} = \frac{6\times\sqrt{3}}{\sqrt{3}\times\sqrt{3}}$

$= \frac{6\sqrt{3}}{3}$

$= 2\sqrt{3}$ (c)

$12 = 2 \times 2 \times 3$

48) The value of $\frac{2^\circ+7^\circ}{5^\circ}$ is (a) 2 (b) 0 (c) $\frac{9}{5}$ (d) $\frac{1}{5}$

Soln:- $\frac{2^\circ+7^\circ}{5^\circ} = \frac{1+1}{1} = 2$ (a) $[a^\circ = 1]$

49) On simplifying $\frac{2^{30}+2^{29}}{2^{31}-2^{30}}$, we get

(a) 1 (b) 2 (c) $\frac{2}{3}$ (d) $\frac{3}{2}$

Soln:- $\frac{2^{29}(2^1+1)}{2^{29}(2^2-2^1)} = \frac{2+1}{4-2} = \frac{3}{2}$ (d)

50) The value of $\sqrt{3^{-2}}$ is (a) $\frac{1}{9}$ (b) 9 (c) -3 (d) $\frac{1}{3}$

Soln:- $\sqrt{3^{-2}} = \sqrt{\frac{1}{3^2}} = \sqrt{\frac{1}{9}} = \frac{1}{3}$ (d)

51) $\left(\frac{256}{625}\right)^{-\frac{3}{4}}$ in its simplified form is equal to

(a) $\frac{25}{64}$ (b) $\frac{64}{125}$ (c) $\frac{125}{64}$ (d) $\frac{64}{25}$

Soln:- $\left(\frac{256}{625}\right)^{-\frac{3}{4}} = \left(\frac{4^4}{5^4}\right)^{-\frac{3}{4}} = \frac{4^{4\times-\frac{3}{4}}}{5^{4\times-\frac{3}{4}}}$

$= \frac{4^{-3}}{5^{-3}} = \frac{5^3}{4^3} = \frac{125}{64}$ (c)

52) $(32)^{\frac{1}{5}} \times (125)^{-\frac{1}{3}}$ in its simplified form is

(a) $\frac{16}{25}$ (b) $\frac{4}{5}$ (c) $\frac{2}{5}$ (d) $\frac{2}{25}$

Soln:- $(32)^{\frac{1}{5}} \times (125)^{-\frac{1}{3}} = 2^{5 \times \frac{1}{5}} \times 5^{3 \times -\frac{1}{3}}$

$= 2 \times 5^{-1} = \frac{2}{5}$ (c)

53) $\frac{5^{n+2} - 6.5^{n+1}}{13.5^{n} - 2.5^{n+1}}$ = (a) $\frac{5}{3}$ (b) $-\frac{5}{3}$ (c) $\frac{3}{5}$ (d) $-\frac{3}{5}$

Soln:- $\frac{5^n.5^2 - 6.5^n.5}{13.5^n - 2.5^n.5} = \frac{5^n(5^2 - 6 \times 5)}{5^n(13 - 2 \times 5)} = \frac{25-30}{13-10}$

$= -\frac{5}{3}$ (b)

54) On rationalizing the denominator of $\frac{1}{\sqrt{2}}$, we get

(a) 2 (b) $\sqrt{2}$ (c) $\frac{2}{\sqrt{2}}$ (d) $\frac{\sqrt{2}}{2}$

Soln:- $\frac{1 \times \sqrt{2}}{\sqrt{2} \times \sqrt{2}} = \frac{\sqrt{2}}{2}$ (d)

55) On rationalizing the denominator of $\frac{1}{2+\sqrt{3}}$, we get

(a) $2-\sqrt{3}$ (b) $\sqrt{3}-2$ (c) $2+\sqrt{3}$ (d) $-\sqrt{3}-2$

Soln:- $\frac{1(2-\sqrt{3})}{(2+\sqrt{3})(2-\sqrt{3})} = \frac{2-\sqrt{3}}{(2)^2-(\sqrt{3})^2} = \frac{2-\sqrt{3}}{4-3} = \frac{2-\sqrt{3}}{1}$ (a)

56) On rationalizing the denominator of $\frac{1}{\sqrt{3}-\sqrt{2}}$, we get

(a) $\frac{1}{\sqrt{3}+\sqrt{2}}$ (b) $\sqrt{3}+\sqrt{2}$ (c) $\sqrt{2}-\sqrt{3}$ (d) $-\sqrt{3}-\sqrt{2}$

Soln:- $\frac{1.(\sqrt{3}+\sqrt{2})}{(\sqrt{3}-\sqrt{2})(\sqrt{3}+\sqrt{2})} = \frac{\sqrt{3}+\sqrt{2}}{(\sqrt{3})^2-(\sqrt{2})^2} = \frac{\sqrt{3}+\sqrt{2}}{3-2} = \frac{\sqrt{3}+\sqrt{2}}{1}$ (b)

57) The value of $64^{\frac{1}{2}}$ is (a) 8 (b) 4 (c) 16 (d) 32

Soln:- $64^{\frac{1}{2}} = 8^{2 \times \frac{1}{2}} = 8$ (a)

58) The value of $32^{\frac{1}{5}}$ is (a) 16 (b) 160 (c) 2 (d) 18

Soln:- $32^{\frac{1}{5}} = 2^{5 \times \frac{1}{5}} = 2$ (c)

59) The value of $(125)^{\frac{1}{3}}$ is
(a) 5 (b) 25 (c) 45 (d) 35

Soln:- $(125)^{\frac{1}{3}} = 5^{3 \times \frac{1}{3}} = 5$ (a)

60) The value of $9^{3/2}$ is
(a) 18 (b) 27 (c) -18 (d) $1/27$

Soln:- $9^{\frac{3}{2}} = 3^{2 \times \frac{3}{2}} = 3^3 = 27$ (b)

61) The value of $32^{2/5}$ is:
(a) 2 (b) 4 (c) 16 (d) 14

Soln:- $32^{\frac{2}{5}} = 2^{5 \times \frac{2}{5}} = 2^2 = 4$ (b)

62) The value of $16^{\frac{3}{4}}$ is
(a) 4 (b) 12 (c) 8 (d) 48

Soln:- $16^{\frac{3}{4}} = 2^{4 \times \frac{3}{4}} = 2^3 = 8$ (c)

63) The value of $125^{-\frac{1}{3}}$ is
(a) $\frac{1}{5}$ (b) $\frac{1}{25}$ (c) $\frac{1}{15}$ (d) $\frac{1}{125}$

Soln:- $125^{-\frac{1}{3}} = 5^{3 \times -\frac{1}{3}} = 5^{-1} = \frac{1}{5}$ (a)

64) The value of $11^{\frac{1}{2}} \div 11^{\frac{1}{4}}$ is
(a) $11^{1/4}$ (b) $11^{3/4}$ (c) $11^{1/8}$ (d) $11^{1/2}$

Soln:- $11^{\frac{1}{2}} \div 11^{\frac{1}{4}} = 11^{\frac{1 \times 2}{2 \times 2} - \frac{1}{4}} = 11^{\frac{2-1}{4}} = 11^{\frac{1}{4}}$ (a)

65) The value of $64^{-3/2}$ is
(a) $\frac{1}{96}$ (b) $\frac{1}{64}$ (c) 512 (d) $\frac{1}{512}$

Soln:- $64^{-\frac{3}{2}} = 8^{2 \times -\frac{3}{2}} = 8^{-3} = \frac{1}{8^3} = \frac{1}{512}$ (d)

66) The value of $125^{\frac{2}{3}}$ is
(a) 5 (b) 25 (c) 45 (d) 35

Soln:- $125^{\frac{2}{3}} = 5^{3 \times \frac{2}{3}} = 5^2 = 25$ (b)

67) The value of $\left[8^{-\frac{4}{3}} \div 2^{-2}\right]^{\frac{1}{2}}$ is

(a) $\frac{1}{2}$ (b) 2 (c) $\frac{1}{4}$ (d) 4

Soln:- $\left[2^{3x-\frac{4}{3}} \div 2^{-2}\right]^{\frac{1}{2}} = \left[2^{-4} \div 2^{-2}\right]^{\frac{1}{2}} = \left[2^{-4+2}\right]^{\frac{1}{2}}$

$= \left(2^{-2}\right)^{\frac{1}{2}} = 2^{-1} = \frac{1}{2}$ (a)

68) If x is a positive real number, then $\sqrt[4]{3\sqrt{x^2}}$ is

(a) $x^{1/24}$ (b) $x^{1/6}$ (c) $x^{1/12}$ (d) $x^{1/20}$

Soln:- $x^{\frac{2}{4} \times \frac{1}{3} \times \frac{1}{2}} = x^{\frac{1}{6}}$ (b)

69) If x = 2 and y = 3, then the value of $x^y + y^x$ is

(a) 15 (b) 17 (c) 19 (d) 21

Soln:- $2^3 + 3^2 = 8 + 9 = 17$ (b)

70) If $x = 9 - 4\sqrt{5}$, then $x + \frac{1}{x}$ is equal to

(a) $8\sqrt{5}$ (b) $-8\sqrt{5}$ (c) 18 (d) 81

Soln:-

$x = 9 - 4\sqrt{5}$

$\frac{1}{x} = \frac{1}{9-4\sqrt{5}} = \frac{9+4\sqrt{5}}{9^2-(4\sqrt{5})^2} = \frac{9+4\sqrt{5}}{81-80} = 9+4\sqrt{5}$

$\therefore x + \frac{1}{x} = 9 - 4\sqrt{5} + 9 + 4\sqrt{5} = \underline{18}$

71) Which of the following is equal to a?

(a) $a^{\frac{13}{7}-\frac{5}{7}}$ (b) $\sqrt[12]{(a^4)^{\frac{1}{3}}}$ (c) $\left(\sqrt{a^5}\right)^{\frac{2}{5}}$ (d) $a^{\frac{13}{7}} \times a^{\frac{7}{13}}$

Soln:- $\left(\sqrt{a^5}\right)^{\frac{2}{5}} = \left(a^{\frac{5}{2}}\right)^{\frac{2}{5}} = a^{\frac{5}{2} \times \frac{2}{5}} = a$ (c)

72) Decimal representation of $-\frac{17}{8}$ is

(a) −2.125 (b) −2.225 (c) 2.125 (d) −1.175

Soln:- $\frac{-17 \times 125}{8 \times 125} = -\frac{2125}{1000} = -2.125$ (a)

73) If $\frac{3}{7} = 0.\overline{428571}$, then $\frac{5}{7}$ is equal to

(a) $0.\overline{704125}$ (b) $0.\overline{714285}$ (c) $0.\overline{77132}$ (d) $0.\overline{714381}$

Soln:-

$$\frac{1}{7} = 0.\overline{142857}$$

$$\frac{5}{7} = 5 \times 0.\overline{142857} = 0.\overline{714285}$$ (b)

74) If $\sqrt{3} = 1.732$, then the value of $\frac{1}{\sqrt{3}}$ approximately is

(a) 0.866 (b) 0.433 (c) 0.288 (d) 0.577

Soln:- $\frac{1}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{3}}{3} = \frac{1.732}{3} \approx 0.577$ (d)

75) If $\sqrt{2} = 1.414$, then the value of $\sqrt{3} \div \sqrt{6}$ upto three places of decimal is

(a) 0.235 (b) 0.707 (c) 1.414 (d) 0.471

Soln:- $\frac{\sqrt{3}}{\sqrt{6}} = \frac{\sqrt{3}}{\sqrt{2} \times \sqrt{3}} = \frac{1}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{2}}{2} = \frac{1.414}{2}$

$= 0.707$ (b)

76) The value of $25^{3/2}$ is

(a) 5 (b) 25 (c) 125 (d) 625

Soln:- $25^{\frac{3}{2}} = 5^{2 \times \frac{3}{2}} = 5^3 = 125$ (c)

77) The value of $\frac{1}{11}$ in decimal form is:

(a) $0.0\overline{99}$ (b) $0.\overline{909}$ (c) $0.\overline{09}$ (d) $0.00\overline{9}$

Soln:- $\frac{1}{11} = 0.\overline{09}$ (c)

78) Decimal expansion of a rational number is terminating if in its denominator there is:

(a) 2 or 5 (b) 3 or 5 (c) 9 or 11 (d) 3 or 7

Soln:- 2 or 5 (a)

79) The exponent form of $\sqrt[3]{7}$ is

(a) 7^3 (b) 3^7 (c) $7^{1/3}$ (d) $3^{1/7}$

Soln:- $7^{\frac{1}{3}}$ (c)

80) Which of the following is true ?
(a) Every whole number is a natural number
(b) Every integer is a rational number
(c) Every rational number is an integer
(d) Every integer is a whole number

Soln:- Every integer is a rational number (b)

81) For positive real numbers a and b, which is not true?
(a) $\sqrt{ab} = \sqrt{a}\sqrt{b}$ (b) $(a+\sqrt{b})(a-\sqrt{b}) = a^2 - b$
(b) $\sqrt{\frac{a}{b}} = \frac{\sqrt{a}}{\sqrt{b}}$ (d) $(\sqrt{a}+\sqrt{b})(\sqrt{a}-\sqrt{b}) = a+b$

Soln:- $(\sqrt{a}+\sqrt{b})(\sqrt{a}-\sqrt{b}) = (\sqrt{a})^2 - (\sqrt{b})^2 = a-b \neq a+b$ (d)

82) Out of the following, the irrational number is
(a) $1.\overline{5}$ (b) $2.4\overline{77}$ (c) $1.2\overline{77}$ (d) π

Soln:- π (d)

83) To rationalize the denominator of $\frac{1}{\sqrt{a}+b}$, we multiply this by
(a) $\frac{1}{\sqrt{a}+b}$ (b) $\frac{1}{\sqrt{a}-b}$ (c) $\frac{\sqrt{a}+b}{\sqrt{a}+b}$ (d) $\frac{\sqrt{a}-b}{\sqrt{a}-b}$

Soln:- $\frac{1(\sqrt{a}-b)}{(\sqrt{a}+b)(\sqrt{a}-b)}$ (d)

84) The number of rational numbers between $\sqrt{3}$ and $\sqrt{5}$ is
(a) one (b) 3 (c) none (d) infinitely many

Soln:- infinitely many (d)

85) If we add two irrational numbers, the resulting number
(a) is always an irrational number (b) is always a rational no.
(c) may be a rational or an irrational no. (d) always an integer

Soln:- may be a rational or an irrational number (c)

86) The rationalizing factor of $7-2\sqrt{3}$ is
(a) $7-2\sqrt{3}$ (b) $7+2\sqrt{3}$ (c) $5+2\sqrt{3}$ (d) $4+2\sqrt{3}$

Soln:- $(7-2\sqrt{3})(7+2\sqrt{3})$ (b)

87) If $\frac{1}{7} = 0.\overline{142857}$, then $\frac{4}{7}$ equals
(a) $0.\overline{428571}$ (b) $0.\overline{571428}$ (c) $0.\overline{857142}$ (d) $0.\overline{285718}$

Soln:- $\frac{4}{7} = 4 \times 0.\overline{142857} = 0.\overline{571428}$ (b)

88) The value of n for which $\sqrt{n}$ be a rational number is (a) 2 (b) 4 (c) 3 (d) 5

Soln:- $\sqrt{4} = 2$, a rational number (b).

89) $\frac{3\sqrt{12}}{6\sqrt{27}}$ equals (a) $\frac{1}{2}$ (b) $\sqrt{2}$ (c) $\sqrt{3}$ (d) $\frac{1}{3}$

Soln:- $\frac{3 \times 2\sqrt{3}}{6 \times 3\sqrt{3}} = \frac{2}{6} = \frac{1}{3}$ (d)

$2|12$, $2|6$, 3 ; $3|27$, $3|9$, 3

90) $(3+\sqrt{3})(3-\sqrt{2})$ equals

(a) $9-5\sqrt{2}-\sqrt{6}$ (b) $9-\sqrt{6}$ (c) $3+\sqrt{2}$ (d) $9-3\sqrt{2}+3\sqrt{3}-\sqrt{6}$

Soln:- $(3+\sqrt{3})(3-\sqrt{2})$

$= 9-3\sqrt{2}+3\sqrt{3}-\sqrt{6}$ (d)

91) The arrangement of $\sqrt{5}, \sqrt{2}, \sqrt{3}$ in ascending order is

(a) $\sqrt{2}, \sqrt{3}, \sqrt{5}$ (b) $\sqrt{2}, \sqrt{5}, \sqrt{3}$ (c) $\sqrt{5}, \sqrt{3}, \sqrt{2}$ (d) $\sqrt{3}, \sqrt{2}, \sqrt{5}$

Soln:- $\sqrt{5} = 2.236$

$\sqrt{2} = 1.414$

$\sqrt{3} = 1.732$

$\therefore \sqrt{2} < \sqrt{3} < \sqrt{5}$ (a)

92) If m and n are two natural numbers and $m^n = 32$, then n^{mn} is

(a) 5^2 (b) 5^3 (c) 5^{10} (d) 5^{12}

Soln:- $2^5 = 32$

$\therefore m = 2, n = 5$

Thus, $n^{mn} = 5^{2\times5} = 5^{10}$ (c)

93) If $\sqrt{10} = 3.162$, then value of $\frac{1}{\sqrt{10}}$ is

(a) 0.3162 (b) 3.162 (c) 31.62 (d) 316.2

Soln:- $\frac{1}{\sqrt{10}} \times \frac{\sqrt{10}}{\sqrt{10}} = \frac{\sqrt{10}}{10} = \frac{3.162}{10} = 0.3162$ (a)

94) Find the value of $(1296)^{0.17} \times (1296)^{0.08}$

(a) 2 (b) 4 (c) 3 (d) 6

Soln:- $(1296)^{0.17+0.08} = (1296)^{0.25} = (1296)^{\frac{1}{4}} = 6^{4\times\frac{1}{4}} = 6$ (d)

95) If $(3^3)^2 = 9^x$, then $5^x = ?$

(a) 1 (b) 5 (c) 25 (d) 125

Soln:-

$(3^2)^3 = (3^2)^x$

$\therefore x = 3$

Then, $5^x = 5^3 = 125$ (d)

96) $\sqrt[3]{2} \times \sqrt[4]{2} \times \sqrt[12]{32} = ?$

(a) 2 (b) $\sqrt{2}$ (c) $2\sqrt{2}$ (d) $4\sqrt{2}$

Soln:-

$2^{\frac{1}{3}} \times 2^{\frac{1}{4}} \times (2^5)^{\frac{1}{12}} = 2^{\frac{1\times4}{3\times4} + \frac{1\times3}{4\times3} + \frac{5}{12}}$

$= 2^{\frac{4+3+5}{12}} \quad \therefore 2^{\frac{12}{12}} = 2$ (a)

97) If $\left(\frac{2}{3}\right)^x \times \left(\frac{3}{2}\right)^{2x} = \frac{81}{16}$, then the value of x is

(a) 1 (b) 2 (c) 3 (d) 4

Soln:-

$\left(\frac{2}{3}\right)^x \times \left(\frac{2}{3}\right)^{-2x} = \frac{81}{16}$

$\left(\frac{2}{3}\right)^{x-2x} = \frac{81}{16}$

$\left(\frac{2}{3}\right)^{-x} = \frac{3^4}{2^4} = \left(\frac{3}{2}\right)^4$

$\left(\frac{2}{3}\right)^{-x} = \left(\frac{2}{3}\right)^{-4}$

$\therefore -x = -4$

$x = 4$ (d)

98) The value of $x^{p-q} \cdot x^{q-r} \cdot x^{r-p}$ is equal to

(a) 0 (b) 1 (c) x (d) $xpqr$

Soln:-

$x^{p-q+q-r+r-p} = x^0 = 1$ (b)

99) If $\left(\frac{3}{4}\right)^6 \times \left(\frac{16}{9}\right)^5 = \left(\frac{4}{3}\right)^{x+2}$, then the value of x is

(a) 2 (b) 4 (c) -2 (d) 6

Soln:- $\left(\frac{3}{4}\right)^6 \times \left(\frac{9}{16}\right)^{-5} = \left(\frac{3}{4}\right)^{-x-2}$

$\left(\frac{3}{4}\right)^6 \times \left(\frac{3}{4}\right)^{-10} = \left(\frac{3}{4}\right)^{-x-2}$

$\left(\frac{3}{4}\right)^{6-10} = \left(\frac{3}{4}\right)^{-x-2}$

$\therefore -4 = -x-2$

$-4+2 = -x$

$-x = -2$

$\therefore x = 2$ (a)

100) The value of $\sqrt{\frac{\sqrt{2}-1}{\sqrt{2}+1}}$ if $\sqrt{2} = 1.4142\ldots$ = (a) 2.4142... (b) 5.8282... (c) 0.4142... (d) 0.1718...

Soln:- $\sqrt{\frac{(\sqrt{2}-1)^2}{(\sqrt{2})^2-1^2}} = \sqrt{(\sqrt{2}-1)^2} = \sqrt{2}-1$

$= 1.4142\ldots - 1$

$= 0.4142\ldots$ (c)

101) The value of $\frac{\sqrt{32}+\sqrt{48}}{\sqrt{8}+\sqrt{12}}$ =

(a) $\sqrt{2}$ (b) 2 (c) 4 (d) 8

Soln:- $\frac{4\sqrt{2}+4\sqrt{3}}{2\sqrt{2}+2\sqrt{3}} = \frac{4(\sqrt{2}+\sqrt{3})}{2(\sqrt{2}+\sqrt{3})}$

$= \frac{4}{2} = 2$ (b)

2 | 32	2 | 48
2 | 16	2 | 24
2 | 8	2 | 12
2 | 4	2 | 6
2	3

102) The value of 1.999... in the form $\frac{p}{q}$; $q \neq 0$

(a) $\frac{19}{10}$ (b) $\frac{1999}{1000}$ (c) 2 (d) $\frac{1}{9}$

Soln:- 2 (c)

103) A rational number between $\sqrt{2}$ and $\sqrt{3}$ is

(a) $\frac{\sqrt{2}+\sqrt{3}}{2}$ (b) $\frac{\sqrt{2}.\sqrt{3}}{2}$ (c) 1.5 (d) 1.8

Soln:- $\sqrt{2} = 1.414$; $\sqrt{3} = 1.732$ $\therefore$ 1.5 (c)