Real Numbers

Class-IX (Test) M.M. 50

Q-1 Find 4 rational numbers between $\frac{3}{5}$ and $\frac{2}{3}$. (2)

Q-2 Represent the following rational numbers on the number line: (2)

a) $\frac{8}{3}$ b)$-1\frac{5}{8}$

Q-3 Write two irrational numbers between 0.1 and 0.2. (1)

Q-4 Multiple choice questions: (4)

a) Between two rational numbers
   i) There is no rational number
   ii) There is exactly one rational number
   iii) There are infinitely many irrational numbers
   iv) There is no irrational number

b) Decimal representation of an irrational number is
   i) Always terminating decimal
   ii) Either a terminating or a repeating decimal
   iii) Either a terminating or non-repeating decimal
   iv) Always non-terminating and non-repeating decimal

c) The simplest form of $(\frac{64}{729})^{-1/6}$ is
   i) $\frac{2}{3}$ ii) $\frac{3}{2}$ iii) $\frac{4}{3}$ iv) $\frac{3}{4}$

d) The product of two irrational numbers is
   i) Always irrational iii) Always an integer
   ii) Always rational iv) sometimes rational and sometimes irrational

Q-5 Represent $\sqrt{2}$ and $\sqrt{3}$ on the number line. (4)

Q-6 Represent $\sqrt{9.3}$ on the number line. (3)

Q-7 Visualize the representation of $5.3\overline{7}$, upto 3 decimal places, on the number line using successive magnification. (2)

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Q-8 State True or False. For each incorrect statement, write the correct statement. (4)

a) Every integer is a rational number.
b) Every real number is rational.
c) The sum of two irrational numbers is irrational.
d) 0 is a rational number.
e) Every terminating decimal is a rational number.
f) $\sqrt{2}$ is an irrational number

Q-9 Write the following in p/q form: (3)

a) $15.7\overline{12}$

Q-10 Find the decimal representation of the following: a) $\frac{49}{90}$ (3)

Q-11 Rationalise the denominator and find the value of a and b : (3)

$$\frac{2\sqrt{6}-\sqrt{5}}{3\sqrt{5}-2\sqrt{6}} = a + b\sqrt{30}$$

Q-12 Simplify: (4)

$$\frac{2}{\sqrt{5}+\sqrt{3}} + \frac{1}{\sqrt{3}+\sqrt{2}} - \frac{3}{\sqrt{5}+\sqrt{2}}$$

Q-13 Simplify: (3)

a) $(16^{-1/5})^{5/2}$ b) $\sqrt[5]{(32)^{-3}}$

Q-14 Prove that (3)

$$\left(\sqrt{3 \times 5^{-3}} \div \sqrt[3]{3}^{-1}\sqrt{5}\right)\sqrt[6]{3 \times 5^{6}} = \frac{3}{5}$$

Q-15 Solve for x : (5)

a) $25^{x-1} = 5^{2x-1} - 100$
b) $3(2^x + 1) - 2^{x+2} + 5 = 0$

Q-16 If $x = \frac{\sqrt{3}+1}{\sqrt{3}-1}$ and $y = \frac{\sqrt{3}-1}{\sqrt{3}+1}$, find the value of $x^2 + xy - y^2$. (4)

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