KINETICS
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IIT-JEE | Medical | Foundations

Rational Numbers

Question 1.
Write denominator of given rational number : 5
(a) 1
(b) 0
(c) 3
(d) none of these

Answer: (a) 1
If there is no denominator then 1 is always the denominator.

Question 2.
Reduce to standard form : $\frac{-3}{-15}$
(a) $\frac{1}{5}$
(b) $\frac{-1}{5}$
(c) $\frac{-1}{-5}$
(d) none of these

Answer: (a) $\frac{1}{5}$
HCF of numerator and denominator is 3 and both have negative sign so result is positive. Standard form is obtained by dividing by 3.

Question 3.
The numbers used for counting objects are called :
(a) Natural numbers
(b) Whole numbers
(c) Integers
(d) None of these

Answer: (a) Natural numbers
Counting objects are always positive and more than zero.

Question 4.
Reduce to standard form $\frac{-36}{24}$
(a) $\frac{6}{4}$
(b) $\frac{-3}{2}$
(c) $\frac{4}{6}$
(d) none of these

Answer: (b) $\frac{-3}{2}$
HCF of numerator and denominator is 12. Standard form is obtained by divided 12.

Question 5.
Fractions are in the form of:
(a) $\frac{numerator}{0}$
(b) $\frac{numerator}{denominator}$
(c) $\frac{denominator}{numerator}$
(d) None of these

Answer: (b) $\frac{numerator}{denominator}$
Definition of a fraction.

Question 6.
Rational number between -2 and -1.
(a) $\frac{3}{2}$
(b) 3
(c) $\frac{-3}{2}$
(d) none of these

Answer: (c) $\frac{-3}{2}$
Sum of two given numbers is divided by 2.

Question 7.
Give equivalent number to $\frac{-2}{7}$
(a) $\frac{-4}{14}$
(b) $\frac{4}{14}$

(c) $\frac{-4}{-14}$
(d) none of these

Answer: (a) $\frac{x}{y}$
Both numerator and denominator is multiplied by same number.

Question 8.
Rewrite the number $\frac{25}{45}$ in the simplest form :
(a) $\frac{5}{45}$
(b) $\frac{5}{9}$
(c) $\frac{9}{5}$
(d) none of these

Answer: (b) $\frac{5}{9}$
HCF of numerator and denominator is 5. Simplest form is detained by dividing both by 5.

Question 9.
Write correct symbol $\frac{-5}{7}$ ▢ $\frac{2}{3}$
(a) < (b) >
(c) =
(d) none of these

Answer: (a) <
Positive number is always greater than negative.

Question 10.
Write correct symbol $\frac{-5}{11}$ ▢ $\frac{-5}{11}$
(a) =
(b) >
(c) <
(d) none of these

Answer: (a) =
Both have same sign, numerator and denominator.

Question 11.
Write correct symbol $0 \square \frac{-7}{6}$
(a) < (b) = (c) >
(d) none of these

Answer: (c) >
Zero is greater than negative rational numbers.

Question 12.
Additive inverse of $\frac{4}{7}$ is :
(a) $\frac{-4}{7}$
(b) $\frac{-4}{-7}$
(c) $\frac{7}{4}$
(d) none of these

Answer: (a) $\frac{-4}{7}$
Number which when added the result becomes zero.

Question 13.
Find the product $\frac{3}{11}$ x $\frac{2}{5}$
(a) $\frac{6}{55}$
(b) $\frac{5}{55}$
(c) $\frac{-6}{55}$
(d) none of these

Answer: (a) $\frac{6}{55}$
Numerator is multiplied by numerator and denominator is multipled by denominator.

Question 14.
The value of $\frac{-1}{8} \div \frac{3}{4}$ is
(a) $\frac{-1}{6}$
(b) $\frac{1}{6}$
(c) $\frac{6}{1}$
(d) none of these

Answer: (a) $\frac{-1}{6}$
First number is multiplied by reciprocal of another.

Question 15.
Find the product $\frac{9}{2}$ x $\frac{-7}{4}$
(a) $\frac{63}{8}$
(b) $\frac{8}{63}$
(c) $\frac{-63}{8}$
(d) none of these

Answer: (c) $\frac{-63}{8}$
Numerator is multiplied by numerator and denominator is multiplied by denominator. Result has negative sign.

Question 16.
Reciprocal of 1.
(a) 0
(b) 1
(c) -1
(d) none of these

Answer: (c) -1
Reciprocal of 1 is 1.

Question 17.
$\frac{4}{5}$ is a rational number of the form $\frac{p}{q}$ where p and q are :
(a) p = 4,q = 5
(b) p = 5, q = 4
(c) none of these

Answer: (a) p = 4,q = 5
In a rational number numerator is denoted by p and denominator by q

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Question 18.
$\frac{2}{3}$ is
(a) Positive rational number

(b) Negative rational number
(c) None of these

Answer: (a) Positive rational number
Both numerator and denominator are positive.

Question 19.
$\frac{-5}{7}$ is :
(a) Positive rational number
(b) Negative rational number
(c) None of these

Answer: (b) Negative rational number
Numerator is positive and denominator is negative.

Question 20.
$\frac{-2}{-5}$ is :
(a) Positive rational number
(b) Negative rational number
(c) None of these

Answer: (a) Positive rational number
Numerator and denominator both are negative.

Question 21.
0 is :
(a) Positive rational number
(b) Negative rational number
(c) neither positive nor negative rational number
(d) None of these

Answer: (c) neither positive nor negative rational number
As 0 lies in the centre of a number line.

Question 22.
Next number of given pattern is $\frac{-1}{3}$, $\frac{-2}{6}$, $\frac{-3}{9}$
(a) $\frac{-4}{12}$
(b) $\frac{-5}{12}$

(c) $\frac{-6}{12}$
(d) none of these

Answer: (a) $\frac{-4}{12}$
Numerator and denominator of 1st rational number—is multiplied by 4.

Question 23.
Ascending order of $\frac{-3}{5}$, $\frac{-2}{5}$, $\frac{-1}{5}$
(a) $\frac{-1}{5}$, $\frac{-2}{5}$, $\frac{-3}{5}$
(b) $\frac{-3}{5}$, $\frac{-2}{5}$, $\frac{-1}{5}$
(c) none of these

Answer: (b) $\frac{-3}{5}$, $\frac{-2}{5}$, $\frac{-1}{5}$
Denominator of each rational number is same. All rational numbers are negative so according to positive on number line ascending order is written

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Question 24.
What number should be added to ($\frac{7}{12}$) to get ($\frac{5}{15}$) ?
(a) $\frac{-19}{60}$
(b) -19
(c) $\frac{1}{2}$
(d) None of these

Answer: (a) $\frac{-19}{60}$

Question 25.
Reduce $\frac{-63}{99}$ to the standard form.
(a) $\frac{11}{17}$
(b) $\frac{-7}{11}$
(c) $\frac{7}{11}$
(d) None of these

Answer: (b) $\frac{-7}{11}$

Question 26.
_____ is the identity for the addition of rational numbers.
(a) 0
(b) 1
(c) -1
(d) None of these

Answer: (a) 0

Question 27.
Which of the rational number is positive?
(a) $\frac{3}{7}$
(b) $\frac{-5}{7}$
(c) $\frac{-4}{7}$
(d) $\frac{-3}{7}$

Answer: (a) $\frac{3}{7}$

Question 28.
The product of two rational numbers is always a _____.
(a) integer
(b) rational number
(c) natural number
(d) whole number

Answer: (b) rational number

Question 29.
The numbers _____ and _____ are their own reciprocals.
(a) -1 and 0
(b) 1 and 0
(c) 1 and -1
(d) None of these

Answer: (c) 1 and -1

Question 30.
Which of the following pairs represent the same rational number?

(a) $\frac{-7}{21}$ and $\frac{1}{3}$
(b) $\frac{1}{3}$ and $\frac{-1}{9}$
(c) $\frac{-5}{-9}$ and $\frac{5}{-9}$
(d) $\frac{8}{-5}$ and $\frac{-24}{15}$

Answer: (d) $\frac{8}{-5}$ and $\frac{-24}{15}$

Question 31.
The product of two numbers is $\frac{-20}{9}$. If one of the numbers is 4, find the other.
(a) $\frac{-5}{9}$
(b) $\frac{3}{11}$
(c) $\frac{12}{39}$
(d) $\frac{-9}{11}$

Answer: (a) $\frac{-5}{9}$

Question 32.
Rewrite $\frac{-44}{72}$ in the simplest form.
(a) $\frac{-18}{11}$
(b) $\frac{-11}{18}$
(c) $\frac{-11}{19}$
(d) $\frac{=11}{20}$

Answer: (c) $\frac{-11}{19}$

Question 33.
What is the average of the two middle rational numbers if $\frac{4}{7}$, $\frac{1}{3}$, $\frac{2}{5}$ and $\frac{5}{9}$ are arranged in ascending order?
(a) $\frac{80}{90}$
(b) $\frac{86}{45}$
(c) $\frac{43}{45}$
(d) $\frac{43}{90}$

Answer: (d) $\frac{43}{90}$

Question 34.
If $\frac{-4}{7} = \frac{-32}{x}$, what is the value of x?
(a) 56
(b) −56
(c) 46
(d) −46

Answer: (a) 56

Question 35.
The rational number $\frac{9}{1}$ in integer is _____.
(a) 0
(b) 9
(c) -9
(d) 1

Answer: (b) 9

Question 36.
What is the result of $2 - \frac{11}{39} + \frac{5}{26}$?
(a) $\frac{149}{39}$
(b) $\frac{149}{78}$
(c) $\frac{149}{76}$
(d) $\frac{149}{98}$

Answer: (b) $\frac{149}{78}$

Question 37.
Associative property is not followed in _____
(a) integers
(b) whole numbers
(c) rational numbers
(d) natural numbers

Answer: (d) natural numbers

Question 38.
Which is the correct descending order of $-2, \frac{4}{-5}, \frac{-11}{20}, \frac{3}{4}$?
(a) $\frac{3}{4} > -2 > \frac{-11}{20} > \frac{4}{-5}$
(b) $\frac{3}{4} > \frac{-11}{20} > \frac{4}{-5} > -2$
(c) $\frac{3}{4} > \frac{4}{-5} > -2 > \frac{-11}{20}$
(d) $\frac{3}{4} > \frac{4}{-5} > \frac{-11}{20} > -2$

Answer: (b) $\frac{3}{4} > \frac{-11}{20} > \frac{4}{-5} > -2$

Question 39.
Which of the following is not a rational number(s)?
(a) $\frac{-2}{9}$
(b) $\frac{4}{-7}$
(c) $\frac{-3}{-17}$
(d) $\frac{\sqrt{2}}{3}$

Answer: (d) $\frac{\sqrt{2}}{3}$

Question 40.
Write the rational number whose numerator is $4 \times (-7)$ and denominator is $(3 - 7) \times (15 - 11)$.
(a) $\frac{16}{28}$
(b) $\frac{8}{13}$
(c) $\frac{13}{8}$
(d) $\frac{28}{16}$

Answer: (d) $\frac{28}{16}$

Question 41.
The reciprocal of – 5 is _____
(a) 5
(b) -5
(c) $\frac{-1}{5}$
(d) None of these

Answer: (c) $\frac{-1}{5}$

Match the following:

Question 1.

1. $\frac{-45}{30}$	a. $\frac{1}{2}$
2. $\frac{36}{-24}$	b. $\frac{-3}{2}$
3. $\frac{-3}{-15}$	c. $\frac{3}{-2}$
4. $\frac{1}{2}$	d. $\frac{1}{5}$

Answer:

1. $\frac{-45}{30}$	b. $\frac{-3}{2}$
2. $\frac{36}{-24}$	c. $\frac{3}{-2}$
3. $\frac{-3}{-15}$	d. $\frac{1}{5}$
4. $\frac{1}{2}$	a. $\frac{1}{2}$

Question 2. Additive Inverse

1. $\frac{-4}{7}$	a. – 1
2. 1	b. $\frac{4}{7}$
3. $\frac{-3}{-5}$	c. $\frac{-3}{7}$
4. $\frac{3}{7}$	d. $\frac{-3}{5}$

Answer:

1. $\frac{-4}{7}$	b. $\frac{4}{7}$
2. 1	a. – 1
3. $\frac{-3}{-5}$	d. $\frac{-3}{5}$
4. $\frac{3}{7}$	c. $\frac{-3}{7}$

Say true or false:

Question 1.
0, 2, 3, 4 … by including 0 to natural numbers, we get whole number.

Answer: true

Question 2.
….-3, -2, -1, 0, 1, 2, 3 … integers.

Answer: true

Question 3.
$\frac{p}{0}$ is a rational number.

Answer: false

Question 4.
The word ‘rational’ caries from the term ‘ratio’.

Answer: true

Question 5.
The number 0 is neither a positive nor a negative rational number.

Answer: true

Question 6.
A positive rational number is to the right of zero on number line.

Answer: true

Question 7.
A negative rational number is to the left of zero on the number line.

Answer: true

Question 8.
We can find limited number of rational numbers between any two numbers.

Answer: false

Question 9.
$\frac{1}{3}$ and $\frac{-1}{9}$ represent the same rational numbers.

Answer: false

Question 10.
$\frac{-2}{9}$ is a negative rational number.

Answer: false

Fill in the blanks:

1. A _____ is defined as a number that can be expressed in the form $\frac{p}{q}$

Answer: rational number

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2. Rational numbers include _____ and _____

Answer: integers, fractions

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3. A rational number is called a positive rational number if both _____ and _____ are positive.

Answer: numerator, denominator

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4. A rational number is called a _____ if either numerator or denominator is negative.

Answer: negative rational number

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5. The number 0 is neither a _____ nor a _____. rational number.

Answer: positive, negative

6. If 1 is the only common factor between the numerator and denominator then rational number is called in the

Answer: standard form

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7. To reduce the rational number to its standard form, we divide its numberator and denominator by their …….

Answer: HCF

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8. A negative rational number is to the _____ of zero whereas a positive rational number is to the _____ of zero on a number line.

Answer: left,right

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9. We can find _____ number of rational numbers between any two rational numbers.

Answer: unlimited

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fill in the box with correct symbol <,>,and =

10. $\frac{-5}{7}$ ▢ $\frac{2}{3}$

Answer: <

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11. $\frac{-4}{5}$ ▢ $\frac{-5}{7}$

Answer: <

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12. $\frac{-7}{8}$ ▢ $\frac{14}{-16}$

Answer: =

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13. $\frac{-8}{5}$ ▢ $\frac{-7}{5}$

Answer: <

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14. $\frac{1}{3}$ ▢ $\frac{-1}{4}$

Answer: >

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15. To multiply two rational numbers we multiply their _____ and _____ separately.

Answer: numerator, denominator

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16. To divide one rational number by the _____ other non zero-rational number, we multiply the rational number by the of the other.

Answer: reciprocal
