Chapter- 1

Chapter Name – Rational Numbers

QUESTION BANK

AVERAGE LEVEL

01. A number which can be expressed as p/q , where p and q are integers and q≠0 is

(a) natural number (b) whole number (c) integer (d) rational number

02. A number of the form p/q is said to be a rational number,if

(a) p, q are integers

(b) p, q are integers and q≠0

(c) p, q are integers and p≠0

(d) p, q are integers and p≠0, also q≠0

03. Which of the following is not true?

(a) rational numbers are closed under addition

(b) rational numbers are closed under subtraction

(c) rational numbers are closed under multiplication

(d) rational numbers are closed under division

04. Zero (0) is

(a) the identity for addition of rational numbers

(b) the identity for subtraction of rational numbers

(c) the identity for multiplication of rational numbers

(d) the identity for division of rational numbers

05. One (1) is

(a) the identity for addition of rational numbers

(b) the identity for subtraction of rational numbers

(c) the identity for multiplication of rational numbers

(d) the identity for division of rational numbers

06. The additive inverse $\frac{-7}{19}$ of

(a)97/19 (b) 19/7 (c) -19/7 (d) -7/19

07. Which of the following statements is false?

(a) Natural numbers are closed under addition

(b) Whole numbers are closed under addition

(c) Integers are closed under addition

(d) Rational numbers are not closed under addition.

08. Which of the following statements is false?

(a) Natural numbers are closed under subtraction

(b) Whole numbers are not closed under subtraction

(c) Integers are closed under subtraction

(d) Rational numbers are closed under subtraction.

09. Which of the following statements is true?

(a) Natural numbers are closed under multiplication

(b) Whole numbers are not closed under multiplication

(c) Integers are not closed under multiplication

(d) Rational numbers are not closed under multiplication.

10. 0 is not

(a) a natural number (b) a whole number

(c) an integer (d) a rational number

11. a + b = b + a is called

(a) commutative law of addition (b) associative law of addition

(c) distributive law of addition (d) none of these.

12. a × b = b × a is called

(a) commutative law for addition (b) commutative law for multiplication

(c) associative law for addition (d) associative law for multiplication.

13. How many rational numbers are there between any two given rational numbers?

(a) Only one (b) Only two (c) Countless (d) Nothing can be said.

14. The rational number that does not have a reciprocal is

(a) 0 (b) 1 (c) -1 (d) 1/2

15. The reciprocal of a positive rational number is

(a) a positive rational number (b) a negative rational number

(c) 0 (d) 1

16. Pick up the rational numbers from the following numbers.

6/7, −1/2, 0, 1/0, 100/0

17. Find the reciprocal of the following rational numbers:

(a) −3/4 (b) 0 (c) 6/11 (d) 5/−9

19. Write two such rational numbers whose multiplicative inverse is same as they are.

20. What is the multiplicative identity of rational numbers?

21. What is the additive identity of rational numbers?

22. If a = 1/2, b = 3/4, verify the following:

(i) a × b = b × a (ii) a + b = b + a

24. Find a rational number between 1/2 and 1/3.

25. Write the additive inverse of the following:

(a) −67 (b) 101/213

MODERATE LEVEL

26. Write any 5 rational numbers between −5/6 and 7/8.

27. Identify the rational number which is different from the other three : 2/3, −4/5, 1/2, 1/3. Explain your reasoning.

28. Represent the following rational numbers on number lines.(a)-2/3 (b)3/4 (c)4/3

29. Find 7 rational numbers between 1/3 and 1/2.

30. If x = 1/2, y = −2/3 and z = 1/4, verify that x × (y × z) = (x × y) × z.

31. If the cost of $4\frac{1}{2}$ litres of milk is Rs $89\frac{1}{2}$ find the cost of 1 litre of milk.

32. The product of two rational numbers is 15/56. If one of the numbers is −5/48, find the other.

33. Let O, P and Z represent the numbers 0, 3 and -5 respectively on the number line. Points Q, R and S are between O and P such that OQ = QR = RS = SP.

34. Let a, b, c be the three rational numbers where a = 2/3, b = 4/5 and c = −56. Verify:

(i) a + (b + c) = (a + b) + c (Associative property of addition)

(ii) a × (b × c) – (a × b) × c (Associative property of multiplication)

35. Rajni had a certain amount of money in her purse. She spent Rs 101/4 in the school canteen, bought a gift worth Rs 253/4 and gave Rs 161/2 to her friend. How much she have to begin with?

36. One-third of a group of people are men. If the number of women is 200 more than the men, find the total number of people.

37. The equivalent of 5/7 whose numerator is 45, is —.

38. The equivalent rational number of 7/9, whose denominator is 45 is———————.

39. Between the numbers 15/20 and 35/40, the greater number is———————-.

40. The reciprocal of a positive rational number is———————.

41. The reciprocal of a negative rational number is———————.

42. Zero has————reciprocal.

43. The numbers ————–and————–are their own reciprocal.

44. If y is the reciprocal of x, then the reciprocal of y^2 in terms of x will be———————-.

45. The negative of 1 is———————-.

46. -5/7 is———————than -3.

47. There are ---------- rational numbers between any two rational numbers.

48. The negative of a negative rational number is always a———————-rational number.

49. Rational numbers can be added or multiplied in any————-.

50. The reciprocal of -5/7 is———————.

51. The multiplicative inverse of 4/3 is————–.

52. The rational number 10.11 in the form p/q is ——–.

The two rational numbers lying between -2 and -5 with denominator as 1 are————and————

True/False

In questions 53 to 96 Verify – (-x) = x for

whether the given statements are True or False

53. If x/y is a rational number, then y is always a whole number.

54. If p/q is a rational number, then p cannot be equal to zero.

55. If r/s is a rational number, then s cannot be equal to zero.

56. 5/10 lies between ½ and 1.

57. 9/6 lies between 1 and 2.

58. The multiplicative inverse of -3/5 is 5/3 .

59. The additive inverse of 1/2 is -2.

60. For every rational number x, x + 1 = x.

61. The reciprocal of a non-zero rational number q/p is the rational number q/p.

62. If x + y = 0, then -y is known as the negative of x, where x and y are rational numbers.

63. The negative of the negative of any rational number is the number itself

64. The negative of 0 does not exist.

65. The negative of 1 is 1 itself.

66. For all rational numbers x and y, x-y = y- x

67. For all rational numbers x and y, x x y = y x x.

68. For every rational number x, x x 0 = x.

69. For every rational numbers x, y and z, x + (y x z) = (x + y) x (x + z)

70. For all rational numbers a, b and c,a (b + c) = ab + bc

71. 1 is the only number which is its own reciprocal.

72. -1 is not the reciprocal of any rational number.

73. For any rational number x, x + (-1) = – x.

74. For rational numbers x and y, if x < y, then x – y is a positive rational number.

75. If x and y are negative rational numbers, then so is x + y.

HIGHER LEVEL

76. Between any two rational numbers there are exactly ten rational numbers.

77. Rational numbers are closed under addition and multiplication but not under subtraction.

78. Subtraction of rational number is commutative.

79. -3/4 is smaller than -2 .

80. 0 is a rational number.

81. All positive rational numbers lie between 0 and 1000.

82. The population of India in 2004-05 is a rational number.

83. There are countless rational numbers between -5/6 and -8/9.

84. The rational number -57/23 lies to the left of zero on the number line.

85. The rational number -7/4 lies to the right of zero on the number line.

86. The rational number – (-8/3) lies neither to the right nor to the left of zero on the number line.

87. The rational numbers -1/2 and -1 are on the opposite sides of zero on the number tine.

88. Every fraction is a rational number.

89. Every integer is a rational number.

90. The rational numbers can be represented on the number line.

91. The negative of a negative rational number is a positive rational number.

92. If x and y are two rational numbers such that x > y, then x – y is always a positive rational

93. 0 is the smallest rational number.

94. Every whole number is an integer.

95. Every whole number is a rational number.

96. 0 is whole number but it is not a rational number.

97. Verify – (-x) = x for (i) x = 4/5 (ii) 5/-7

98. Give one example each to show that the rational numbers are closed under addition, subtraction and multiplication. Are rational numbers closed under division? Give two examples in support of your answer.

99. Verify the property x + y = y + x of rational numbers by taking x= -2/3 and y = -5/6

100. A train travels 1445/2km in 17/2h. Find the speed of the train in km/h.

101. If 16 shirts of equal size can be made out of 24m of cloth, how much cloth is needed for making one shirt?

102. 7/11 of all the money in Hamid's bank account is Rs 77000. How much money does Hamid have in his bank account?

103. A $117\frac{1}{3}$ m long rope is cut into equal pieces measuring $7\frac{1}{3}$ m each. How many such small pieces are these ?

104. 1/6 of the class students are above average, 1/4 are average and rest are below average. If there are 48 students in all, how many students are below average in the class?

105. A mother and her two daughters got a room constructed for Rs 62000. The elder daughter contributes 3/8of her mother's contribution while the younger daughter contributes ½ of her mother's share. How much do the three contribute individually?

106. Arrange the numbers is 1/4 ,13/16 , 5/8 in the descending order.

107. The product of two rational numbers is -14/27 If one of the numbers be 7/9 find the other.

108. By what numbers should we multiply -15/20 so that the product may be -5/7 ?

109. By what number should we multiply -8/13 so that the product may be 24?

110. The product of two rational numbers is -7. If one of the number is -5, find the other?

111. Can you find a rational number whose multiplicative inverse is -1?

112. Find five rational numbers between 0 and 1.

113. Find the two rational numbers whose absolute value is 1/5

114. From a rope 40 m long, pieces of equal size are cut. If the length of one piece is 10/3 m, find the number of such pieces.

115. $5\frac{1}{2}$ long rope is cut into 12 equal pieces. What is the length of each piece?

116. Write the following rational numbers in the descending order.

8/7, -9/8, -3/2, 0, 2/5

117. Find the sum of additive inverse and multiplicative inverse of 7.

118. Find the product of additive inverse and multiplicative inverse of -1/3.

119. The sum of the two rational numbers is -6. If one of them is −8/5, find the other.

120. Which rational number should be added to −7/8 to get 5/9 ?

121. Which rational number should be subtracted from −5/6 to get 4/9 ?

122. By what number should −8/13 be multiplied to get 16?

123. Divide the sum of 3/7 and −5/14 by −1/2.

124. Divide the sum of 5/8 and −11/12 by the difference of 3/7 and 5/14

125. Insert five rational numbers between 3/5 and 2/5

126. Insert six rational numbers between 5/6 and 8/9

127. Evaluate: 5/9+−7/6

128. The sum of two rational numbers is 9/20If one of them is 2/5 find the other.

129. The sum of the two rational numbers is -6. If one of them is −8/5.find the other.

130. Which rational number should be added to −5/9 to get −2/3.

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