IITJEE Foundation Practice paper

REAL NUMBERS

class-10th-Mathematics Number of Questions: 96

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1

If $'a'$ is a positive rational number and $'n'$ is a positive integer greater than 1, then a^n is ?

integer rational number natural number whole number

2

$'0'$ is a

rational number irrational number natural number none of the above

3

The decimal representation of the rational number $\frac{16}{27}$ is

$0.\overline{296}$ $0.\overline{463}$ $0.\overline{592}$ $0.\overline{573}$

4

If $'p'$ is any prime positive integer, then $\sqrt{p}$ is a

integer rational number irrational number none of the above

5

$\sqrt{3}+\sqrt{7}$ is

rational irrational integer none of the above

6

The decimal expansion of the rational number $\frac{14587}{1250}$ will terminate after

- one decimal place
- two decimal places
- three decimal places
- four decimal places

7

Which among the fractions $\frac{5}{13}, \frac{7}{20}, \frac{8}{11}, \frac{7}{11}$ ends in a terminating decimal.

- $\frac{5}{13}$
- $\frac{7}{20}$
- $\frac{8}{11}$
- $\frac{7}{11}$

8

The decimal form of $3\frac{3}{8}$ is

- 5.73
- 4.262
- 2.415
- 3.375

9

If two positive integers a and b are written as $a = x^3y^2$ and $b = xy^3$;
If x, y are prime numbers, then HCF(a, b) is

- xy
- xy^2
- x^3y^3
- x^2y^2

10

If two positive integers p and q can be expressed as $p = ab^2$ and $q = a^3b$; a, b being prime numbers, then LCM(p, q) is

- ab
- a^2b^2
- a^3b^2
- a^3b^3

11

For any integer m, every even integer is in the form

- m
- $m + 1$
- $2m$
- $2m + 1$

12

For any integer q, every odd integer is of the form

q $q+1$ $2q$ $2q+1$

13

The prime factorization of 1171170 is

$11^2.7^2.5^2.3.2^3$ $13.11^2.7^2.5.2^2$ $13^2.11^2.7^2.5$ $13^2.11.7.5.3^2.2$

14

Let p be a prime number and a be a positive integer. If p divides a^2, then

p does not divide a. p divides a. p may or may not divide a.
None of the above

15

The greatest number of 6 digits exactly divisible by 24 , 15 , 36 is

999720 999999 999000 999872

16

_____ states that every composite number can be uniquely expressed as a product of primes, apart from the order of factors.

Euclid's division lemma Euclid's division algorithm
Fundamental theorem of arithmetic None of the above

17

For any two numbers HCF x LCM = ___ of the numbers.

Sum Product Difference Can't be determined

18

The number 0.6 in the form $\frac{p}{q}(q \neq 0)$ is

$\frac{19}{35}$ $\frac{57}{99}$ $\frac{57}{95}$ $\frac{19}{30}$

19

In Euclid's division lemma, when $a = bq + r,$ where a, b are positive integers which among the following is correct.

$0 < r < b$ $0 \leq r < b$ $0 < r \leq b$ $0 \leq r \leq b$

20

All decimal numbers are

irrational numbers integers real numbers rational numbers

21

If p, q are any positive rational numbers where $p \neq q$ then $(\sqrt{p} - \sqrt{q})(\sqrt{p} + \sqrt{q})$ is a

0 $(\sqrt{p} + \sqrt{q})^2$ irrational number rational number

22

For any positive rational number $'a'$ which is not a perfect square $5\sqrt{a}$ is

irrational number rational number integer None of the above

23

17 x 9 x 11 + 13 x 7 is a

odd number even number prime number none of the above

24

$\sqrt{20} . \sqrt{45}$ =

30 20 $6\sqrt{5}$ 45

25

The least number divisible by all numbers between 1 and 10 (both inclusive) is

1150 1000 1020 2520

26

The decimal expansion of π is

terminating non-terminating and repeating non-terminating and non-repeating none of the above

27

The term algorithm is given by the mathematician

Gauss Euclid Pythogoras Khwarizmi

28

A rational number can be expressed as a terminating decimal if the denominator has factors

2, 3 or 5 2 or 3 2 or 5 3 or 5

29

If a, b are two prime numbers, then LCM(a, b) is

a b ab 1

30

The number of prime factors in prime factorization of 5005 are

4 2 6 7

31

Which of the following fractions $\frac{37}{55}, \frac{88}{22.3^2}, \frac{22}{2^3 5^4}, \frac{17}{51}$ has terminating decimal

$\frac{37}{55}$ $\frac{88}{2^2.3^2}$ $\frac{22}{2^3.5^4}$ $\frac{17}{51}$

32

Which of the following is not an irrational number.

$2-\sqrt{3}$ $2+\sqrt{3}$ $3+\sqrt{2}$ $4+\sqrt{9}$

33

The HCF of 1771, 5313 is

23 161 253 1771

34

The prime factorization of 32760 is

$2^3.3^3.5^2.11.13$ $2^2.3^3.5.7.11$ $2^3.3^2.5.7.13$ $2^2.3..5^2.7.13$

35

π is an

rational number irrational number integer none of the above

36

The product of a non-zero rational number and irrational number is

integer rational number irrational number none of the above

37

Two integers a and b are said to be co-prime if

LCM(a, b) = 1 GCD(a, b) = 1 LCM(a, b) = GCD(a, b) = 1

None of the above

38

HCF of 100 and 190 is

19 2 5 10

39

Find the HCF of 105 and 120.

21 15 7 3

40

The prime factorization of 6^n does not have _____ as a factor.

2 3 5 Can't be determined

41

LCM of 96 and 404 is

○ 9696 ○ 4 ○ 404 ○ 96

42

$5-2\sqrt{3}$ is

○ rational number ○ integer ○ irrational number ○ none of the above

43

The LCM and HCF of two numbers respectively is 23460 and 2. If one of the numbers is 92, then the other number is

○ 450 ○ 347 ○ 255 ○ 510

44

The decimal expansion of the rational number $\frac{43}{2^4.5^3}$ will terminate after _____ places of decimals.

○ four ○ two ○ three ○ will not terminate

45

571 is a

○ composite number ○ prime number ○ even number ○ none of the above

46

5^{2n-1} (n is a positive integer) is always divisible by

○ 5 ○ 7 ○ 24 ○ 26

47

The sum of two numbers is 54, their LCM is 120, HCF is 6. Then the sum of their reciprocals is

○ $\frac{5}{120}$ ○ $\frac{4}{30}$ ○ $\frac{3}{40}$ ○ $\frac{9}{40}$

48

HCF of 320 and 128 is

○ 32 ○ 64 ○ 128 ○ 2

49

LCM of 900 and 270 is

○ 900 ○ 90 ○ 2700 ○ 300

50

HCF of 8, 9, 25 is

○ 2 ○ 1 ○ 3 ○ 5

51

LCM of 8, 28, 175 is

○ 140 ○ 700 ○ 1 ○ 1400

52

HCF of 46, 69 is

○ 23 ○ 13 ○ 2 ○ 3

53

LCM of 65, 57 is

○ 65 ○ 1 ○ 3705 ○ 57

54

Three strings of different lengths 240 cm, 318 cm and 426 cm are to be cut into equal lengths. The greatest possible length of each piece is

○ 20 cm ○ 6 cm ○ 71 cm ○ 53 cm

55

Two light houses flash their lights every 20 seconds and 30 seconds respectively. Given that they flashed together at 8 pm, find when they flash together again?

8:01pm 8:02pm 8:03pm 8:05pm

56

John wants to cut identical squares as big as he can from a paper 168 cm by 196 cm. The length of each square will be

168 cm 196 cm 28 cm 84 cm

57

A group of students can be further separated into groups of 7,11,19. Find the smallest possible total number of students?

1 77 133 1463

58

Greater number of 4 digits which is divisible by each one of 12, 18, 21 and 28 is

9999 9828 9747 9800

59

LCM of 1020 and 444 is

452880 279276 10248 37740

60

The ratio of LCM and HCF of 90 and 144 is

1:18 1:40 40:1 720:1

61

The HCF of two numbers is 6 and their sum gives 102 then the numbers are:

(i) 54, 48

(ii) 32, 70

(iii) 19, 83

(iv) 74, 28

○ (i) ○ (ii) ○ (iii) ○ (iv)

62

The HCF of 1000 and 1125 is

○ 125 ○ 150 ○ 140 ○ 100

63

LCM of 625, 650 is

○ 1250 ○ 8125 ○ 15000 ○ 16250

64

HCF of 60, 84, 108 is

○ 36 ○ 12 ○ 60 ○ 108

65

HCF of 0.36, 0.48, 0.72 and 2.4 is

○ 0.26 ○ 0.08 ○ 0.12 ○ 0.84

66

The least positive integer which is a perfect square and also divisible by each of 6, 12, 18 and 24 is

○ 36 ○ 84 ○ 72 ○ 144

67

The HCF, LCM of two numbers is 27, 405 respectively and one of the numbers is 81, then the other number is?

○ 135 ○ 189 ○ 27 ○ 81

68

The smallest number which when increased by 5 is divisible by 9, 21, 25 and 30 is

○ 3150 ○ 3145 ○ 5235 ○ 4355

69

The HCF of two numbers is 11 and the LCM is 693. If one number is 99, then the other number is

○ 196 ○ 66 ○ 77 ○ 250

70

Two numbers are in the ratio 2:3. If their LCM is 48. Then their HCF is?

○ 6 ○ 40 ○ 16 ○ 8

71

Greatest number of five digits which is divisible by 15, 25, 40 and 75 is

○ 99500 ○ 99600 ○ 99555 ○ 99780

72

LCM(60, 84, 108) is

○ $2^2.3^3.5.7$ ○ $2^2.3$ ○ $2^2.3.5$ ○ $2^2.3.5.7$

73

The prime factorization of 540 is

○ $2^2.3.5^2$ ○ $2^2.3^2.5$ ○ $2^3.3^2.5$ ○ $2^2.3^3.5$

74

HCF of $\frac{1}{2}, \frac{3}{5}, \frac{1}{3}$ is

○ $\frac{1}{10}$ ○ $\frac{1}{30}$ ○ $\frac{1}{15}$ ○ $\frac{1}{6}$

75

LCM of 0.63, 1.05, 2.1 is

○ 6.30 ○ 0.21 ○ 2.10 ○ 0.63

76

Prime factorization of 38220 is

○ $2.3^3.5^2.7.13$ ○ $2^3.3^2.5.7.13$ ○ $2.3^2.5^2.7.11$ ○ $2^2.3.5.7^2.13$

77

LCM of $\frac{2}{3}, \frac{5}{6}, \frac{4}{9}$ is

○ $\frac{3}{20}$ ○ $\frac{20}{3}$ ○ $\frac{10}{6}$ ○ $\frac{3}{10}$

78

Reducing $\frac{336}{240}$ to its lowest terms we get

○ $\frac{7}{5}$ ○ $\frac{5}{7}$ ○ $\frac{3}{7}$ ○ $\frac{5}{3}$

79

The HCF of 592 and 252 expressed as a linear combination is

○ (-12) x 592 + 26 x 252 ○ (-18) x 592 + 23 x 252 ○ 10 x 592 - 20 x 252
○ (-20) x 592 + 47 x 252

80

If the HCF of 408 and 1032 is expressible in the form of $1032x - 408(5)$ then the value of x is

○ 2 ○ 4 ○ 3 ○ 5

81

The largest number that divides 626, 3127 and 15628 and leaves remainders of 1, 2, 3 respectively is

125 25 625 3125

82

LCM of 306, 657 is

9 22338 657 1241

83

A mason has to fit a bathroom with square marble tiles of the largest possible size. The size of the bathroom is 10ft by 8ft.
What is the size in inches the tile required that needs to be cut?
How many such tiles are required?

24 inches, 20 tiles 20 inches, 24 tiles 15 inches, 30 tiles 20 inches, 25 tiles

84

The prime factorization of 45470971 is

$7^2.13.17^2.19$ $7.13^2.17^2.19$ $7^2.13^2.17.19^2$ $7^2.13^2.17^2.19$

85

The HCF of 657 and 963 is expressible in the form of $657x + 963(-15)$ then x is

9 22 24 15

86

The largest possible integer that divides 398, 436 and 542 leaving 7, 11, 15 respectively is

23 25 17 31

87

The HCF of 210 and 55 is expressible in the form of $210x + (-19)55$ then the value of x is

11 -5 5 -13

88

The decimal expansion of $\frac{13}{3125}$ terminates after _____ decimal points.

two three four five

89

The ratio of HCF and LCM of 510 and 92 is

2:11730 1:11730 11730:1 1:23460

90

The prime factorization of greatest 4-digit number is

$3^2.11.101$ $3.11^2.23$ $3^2.11^2$ $3.11.101$

91

HCF of 70, 84, 336, 1260 is

6 28 14 21

92

Two numbers are co-prime if and only if the common factor (H.C.F) between them is

2 3 1 4

93

If H.C.F (306, 657) = 9, then find L.C.M (306, 657)

2238 22338 2038 238

94

$0.7\overline{6}$ = ?, in terms of $\frac{p}{q}$

○ $\frac{69}{900}$ ○ $\frac{69}{90}$ ○ $\frac{67}{90}$ ○ $\frac{76}{90}$

95

Express $3.1\overline{25}$ in $\frac{p}{q}$ form

○ $\frac{3125}{100}$ ○ $\frac{3095}{99}$ ○ $\frac{3094}{990}$ ○ $\frac{3940}{990}$

96

Product of $7+4\sqrt{3}$ and $7-4\sqrt{3}$ is ___ number.

○ rational ○ irrational ○ terminating decimal ○ Non-terminating decimal