Expected Number System Questions for Railway Exams

Number System for RRB NTPC Stage-II Exams

1) 0.5656……. + 0.4343….. is equal to

a) 1.44….

b) 1

c) 2.33…..

d) 0.766…..

2) Find the value of (0.84×0.35)/(4.9×0.2)

a) 0.3

b) 0.2

c) 0.03

d) 0.02

3) Which of the following option is correct?

a) 5/18 > 0.3…. > 7/6

b) 0.3…>5/18 > 7/6

c) 7/6 >0.3….>5/18

d) 7/6>5/18>0.3…

4) Arrange the following irrational numbers in descending order

$2\sqrt{5}$, $3\sqrt{6}$, $2\sqrt{2}$

a) $3\sqrt{6}>2\sqrt{5}>2\sqrt{2}$

b) $3\sqrt{6}<2\sqrt{5}<2\sqrt{2}$

c) $3\sqrt{6}<2\sqrt{5}>2\sqrt{2}$

d) None of the above

5) Which of the following has a terminating decimal expression?

a) 8/9

b) 5/12

c) 2/11

d) 19/25

6) Simplify: $a \div \{[a^2/(a-4)]+[4a/(4-a)]\}$

a) a/(a-4)

b) (a-4)/a

c) 1

d) 0

7) Find out which of the following sets form co-prime numbers

a) (21, 42)

b) (43, 129)

c) (18,35)

d) (12,36)

8) $3^{51}+3^{52}+3^{53}+3^{54}$ is divisible by

a) 11

b) 16

c) 25

d) 30

9) Which one of the following fractions lays in between 5/7 and 15/17

a) 4/7

b) 16/17

c) 95/119

d) 106/119

10) When the largest four digit number is divided by a number and the result is added with same number the answer obtained is smallest five digit number. Find the number/numbers?

a) 3/4, 89

b) 3/2, 999

c) 5/2, 9999

d) 1, 9999

11) Find the average of first 40 even numbers

a) 41

b) 40

c) 38

d) 42

12) If 1/54.76 = 0.01826 then find the value of 1/18.26

a) 0.05476

b) 0.005476

c) 0.8956

d) 0.08956

13 Find the irrational number from the following

a) 23

b) 3/5

c) √2

d) √9

14) If @ denotes +, # denotes × , $ denotes – and ^ denotes ÷ then find which of the following options are correct

a) 7 @7#7$7^7=59

b) 7#7@7$7^7=57

c) 7$7#7@7^7=55

d) 7#7$7^7@7=55

15) 2.5656…. + 5.4747…… - 3.3131……. =?

a) 52/11

b) 54/11

c) 67/19

d) 119/123

16) Find the unit digit of the following product

$(4336)^{344}\times(3457)^{433}$

a) 2

b) 3

c) 4

d) 8

17) Which of the following number is divisible by 16?

a) 456856

b) 356884

c) 760272

d) 650372

18) If 67542x356 is divisible by 11 then find the value of x

a) 5

b) 4

c) 6

d) 7

19) If 53x68 is divisible by 9 then find the value of x

a) 6

b) 4

c) 3

d) 5

20) The difference between the place value and the face value of 8 in 28732 is-

a) 1572

b) 79992

c) 7992

d) 792

21) Which of the following number is divisible by 8?

a) 234564

b) 435568

c) 897426

d) 769582

22) Find the unit digit of the product: (2348×9876×3487×1983)

a) 5

b) 6

c) 8

d) 9

23) Which of the following number is completely divisible by 6?

a) 983356

b) 982346

c) 695248

d) 983256

24) Check for the following numbers which are completely divisible by 12?

a) 65428

b) 21682

c) 11472

d) None of the above

25) Find the average of first 28 odd numbers

a) 492

b) 28

c) 520

d) 32

26) Find the number of times the number 3 comes on writing from 1 to 100?

a) 19

b) 18

c) 21

d) 20

27) If product of two numbers and sum of their reciprocals is 90 and 7/30 respectively then find the sum of squares of those two numbers

a) 261

b) 271

c) 255

d) 245

28) If the sum of the positive number and its reciprocal is 37/6 then find the square of that number.

a) 4/9

b) 36

c) 49/36

d) 49

29) If the difference between two numbers is 2 and result of the division of one number by another number is 14/15 then find the sum of two numbers.

a) 56

b) 68

c) 58

d) 76

Expected Number System Questions for Railway Exams

30) If the sum of three consecutive odd numbers is 51 then find the largest of those three numbers

a) 11

b) 21

c) 23

d) 19

31) Three numbers are in arithmetic progression if the difference between the largest and smallest number is 8 and the sum of middle number and last number is 60 then find the smallest number

a) 23

b) 27

c) 24

d) 28

32) Three natural numbers are in geometric progression if the product of smallest and largest number is 16. If the difference between the middle number and largest number is 4 then find the cube of largest number.

a) 512

b) 64

c) 1000

d) 343

33) The sum of squares of two positive numbers is 145 and difference between those two square values is 17. Then find the sum of two numbers

a) 16

b) 17

c) 18

d) 19

34) If xyz=300, x/y=5/6 and y/z=3/5 then find the value of x^3

a) 216

b) 1000

c) 343

d) 125

35) If the sum of two numbers is thrice of the difference between those two numbers then find the ratio between the largest and smallest number.

a) 2:1

b) 3:2

c) 2:3

d) 4:3

36) On adding a number by three fourth of itself the answer obtained is 4 less than the twice of the number. Find the square of the number?

a) 225

b) 225/256

c) 256

d) 196

37) Three numbers is in arithmetic progression, if their sum is equal to 489 and the smallest number is 6 less than the largest number then find the largest number

a) 163

b) 156

c) 166

d) 176

38) Find the difference between the squares of the consecutive natural numbers

a) n^2-1

b) $1-n^2$

c) 2n+1

d) 2n-1

39) $8^3+9^3+\ldots\ldots\ldots+14^3$ =?

a) 10241

b) 10393

c) 11353

d) 12458

40) If the difference between a natural number and twice of its reciprocal is 71/6 then find that number

a) 6

b) 8

c) 14

d) 12

41) Simplify the following:

(5 4/7 + 4 3/14 –5 2/21) ÷(1/7)

a) 33.75

b) 34

c) 32.83

d) 33.25

42) Simply: (0.9×0.009×0.81)÷(0.0729)

a) 0.09

b) 0.009

c) 0.81

d) 0.081

43) Find the sum of 12+15+18+21+24+……+99

a) 1667

b) 1697

c) 1665

d) 1698

44) $5^3+5^4+5^5+5^6+5^7$=?

a) 98425

b) 96325

c) 97625

d) 97725

45) Find the sum of the squares of first 35 natural numbers?

a) 15620

b) 14520

c) 14930

d) 14910

46) If 616 number of trees need to be planted in a rectangular field and the number of rows is 6 more than the number of columns then find the number of rows

a) 22

b) 28

c) 26

d) 24

47) Find the value of 1-2-4-6-8-10-12-14-……..-46

a) -543

b) -631

c) -553

d) -551

48) If the sum of three consecutive odd natural numbers is 45 then find the product of those numbers

a) 3315

b) 3325

c) 3365

d) 4358

49) $(6^2+6^5)\div 93=42\times 2^a$, find the value of a

a) 2

b) 3

c) 1

d) 0

50) $2541-1456+3254=x^2+(75\times 260\times 13/78)$find x

a) 32

b) 35

c) 33

d) 45

Expected Number System Questions for Railway Exams

ANSWERS

1) Answer: B

Solution:

0.5656… = (56.5656…)/100

Let 0.5656….= x

Then the above expression becomes

x= 56/100+x/100

99x/100 =56/100

x=56/99

Similarly, 0.4343… can be written as 43/99

0.5656… + 0.4343…=56/99 + 43/99 =1

2) Answer: A

Solution:

= (0.84×0.35)/(4.9×0.2)

On simplification answer will be 0.3

3) Answer: C

Solution:

As, 0.3…=0.333..

5/18=0.277….

7/6=1.166….

On comparing the above three values options C will be the correct one.

4) Answer: A

Solution:

For easy comparison of irrational numbers square each number and compare them

$(3\sqrt{6})^2=54$

$(2\sqrt{5})^2=20$

$(2\sqrt{2})^2=8$

By analyzing the above answers option a will be the correct answer.

5) Answer: D

Solution:

8/9=0.888….

5/12=0.4166…

2/11=0.1818…..

19/25=0.76

6) Answer: C

Solution:

= a ÷ {[a^2/(a-4)]+[4a/(4-a)]}

= a ÷ {[a^2/(a-4)]-[4a/(a-4)]}

=a/[(a^2-4a)/(a-4)]

= a/[a(a-4)/(a-4)]

=1

7) Answer: C

Two numbers have only 1 as the Common Factor is known as co-prime numbers. All the prime numbers are co-prime numbers

Factors of 18 are 1,2,3,6 and 18

Factors of 35 are 1,5,7 and 35

The only Common factor between 18 and 35 is 1

(18,35) are coprime numbers

8) Answer: D

Solution:

$3^{51}+3^{52}+3^{53}+3^{54}= 3^{51}(1+3^1+3^2+3^3)$

$= 3^{51}(1+3+9+27)$

$= 3^{51} \times 40$

The possible answer is 30

9) Answer: C

Solution:

By analyzing the options, 4/7 < 5/7 and 16/17>15/17

So option a and b are neglected

Since denominator 119 is product of the denominators of two given fractions

Check for the average of those two terms as average value lies between those two fractions only.

Average of 5/7 and 15/17 = (5/7+15/17)/2

= (190/119)/2=95/119

10) Answer: D

Solution:

Largest 4 digit number= 9999

Smallest 5 digit number=10000

10000=9999/x +x

x^2-10000x+9999=0

x^2-9999x-x+9999=0

(x-9999)(x-1)=0

x=1, 9999

11) Answer: A

Solution:

Solution:

Sum of first n even number =n(n+1)

Sum of first 40 even number =40*41

Average of first 40 even number= (40*41)/40= 41

12) Answer: A

Solution:

Given, 1/54.76 = 0.01826

Rewrite as, 1/0.01826 =54.76

Divide by 1000

1/(1000*0.01826) =54.76/1000

1/18.26 = 0.05476

13) Answer: C

Solution:

An Irrational Number is a real number that cannot be written as a simple fraction.

√2= 1.41421356237

14) Answer: D

Solution:

Check with options

a) 7 @7#7$7^7=59

= 7+7×7-7÷7

= 55 ≠59

b) 7#7@7$7^7=57

=7×7+7-7÷7

=55≠57

c) 7$7#7@7^7=55

= 7-7×7+7÷7

=-41≠55

d) 7#7$7^7@7=55

= 7×7-7÷7+7

=49-1+7

=55

So, option d is correct

15) Answer: A

Solution:

= 2.5656…. + 5.4747…… - 3.3131……. (1)

2.5656…..=2+0.5656…..= 2+x ----(2)

x=0.5656…..

Multiply by 100,

100x=56.565656…

100x=56+x

99x=56

x=56/99

(2)=> 2.5656….=2+56/99 =2 56/99

Similarly 5.4747…=5 47/99

3.3131…. = 3 31/99

(1)=> 2 56/99+5 47/99 – 3 31/99

= (2+5-3)+(56/99+47/99-31/99)

= 4+(72/99)

=4 8/11 =52/11

16) Answer: A

Solution:

For finding the unit digit of the given product first find the last digit of each term.

Check the periodicity of unit digit. Here 6 and 7 are unit digit

Its respective periodicity is 1 and 4

For periodicity 1 replace the given power by 1 and for periodicity 4 check for remainder by dividing the power with this periodicity

433/4 => remainder 1

So, the given question is rewritten as,

$= 6^1 \times 7^1$

As unit digit of above product is 2

So, the unit digit of the complete product is 2.

17) Answer: C

Solution:

If the last four digit of the given number is divisible by 16 then the given number is completely divisible by 16

a) 456856

Checking for last four digit: 6856/16 -–remainder is 4

b) 356884

Checking for last four digit: 6884/16 –remainder is 4

c) 760272

Checking for last four digit: 0272/16 –remainder is 0

d) 650372

Checking for last four digit: 0372/16 ---remainder is 4

Since, option c is gives remainder 0 therefore option c is correct

18) Answer: C

Solution:

If the difference between the sum of the digits in odd places and the sum of the digits in even places of the given number is zero then the given number is said to be divisible by 11.

Sum of odd placed digits – sum of the even placed digit =0

(6+5+2+3+6)-(7+4+x+5)=0

22-16-x=0

x=6

19) Answer: D

Solution:

If a number is divisible by 9 then its sum of the digits is equal to multiple of 9

Therefore, 5+3+x+6+8=multiple of 9

22+x=27(As 27 is nearest multiple of 9)

x=27-22=5

20) Answer: C

Solution:

In 28732, place value of 8 = 8000
And the face value is 8
⇒So (8000 – 8) = 7992

21) Answer: B

Solution:

If the last three digit of the given number is divisible by 8 then the given number is completely divisible by 8.

a) 234564

Last three digit: 564/8 –remainder is 4

b) 435568

Last three digits: 568/8—reaminder is 0

c) 897426

Last three digits: 426/8---remainder is 2

d) 769582

Last three digits: 582/8—remainder is 6

Option b will be answer as it gives remainder as 0.

22) Answer: C

Solution:

Unit digit of the product of such large numbers can be found out by multiplying the last digits alone of each term and the unit digit of such product is unit digit of the complete product.

Unit digits are: 8, 6, 7, and 3

Product = 8*6*7*3=1008

Unit digit is 8

23) Answer: D

Solution:

If a number is divisible by 6 then the same number should be divisible by its factors 2 and 3.

As all given numbers is even then the given numbers are divisible by 2

If the sum of the digits of the number is multiple of 3 then that number is divisible by 3.

a) 9+8+3+3+5+6=34 is not multiple of 3

b) 9+8+2+3+4+6=32 is not multiple of 3

c) 6+9+5+2+4+8=34 is not multiple of 3

d) 9+8+3+2+5+6=33 is multiple of 3

So, option d will be the correct answer.

24) Answer: C

Solution:

If the given number is divisible by 4 and 3 the factors of 12 then the given number is divisible by 12.

Divisibility by 3: sum of the digits of the given number is multiple of 3

Divisibility by 4: Last two digits of the given number is divisible by 4

a) 65428

Sum of the digits= 6+5+4+2+8=25 not a multiple of 3. The given number is not divisible by 12 though the last two digits are multiple of 4

b) 21682

Sum of the digits =2+1+6+8+2=19 not a multiple of 3.The given number is not divisible by 12.

c) 11472

Sum of the digits=1+1+4+7+2=15 multiple of 3

And last two digits are divisible by 4

So, this number is divisible by 12.

25) Answer: B

Solution:

Sum of first n odd number $=n^2$

Sum of first 28 odd number $=28^2$

Average of first 28 odd number= (28*28)/28= 28

26) Answer: D

Solution:

Such numbers are,

3, 13, 23, 33,……93 = 11 (as 33 contains 3 two times)

30, 31, 32, 33,….39=11-2=9(As 33 is counted already so 2 is subtracted)

So total number of 3 = 11+9=20

27) Answer: A

Solution:

Let the two numbers are x and y

xy=90

1/x+1/y=7/30

(y+x)/xy = 7/30

(x+y)/90=7/30

x+y=21

As per algebraic identity,

$x^2+y^2=(x+y)^2-2xy$

$x^2+y^2=(21)^2-2(90)$

$x^2+y^2=441-180=261$

28) Answer: B

Solution:

Let the number be x

x+1/x=37/6

$(x^2+1)/x=37/6$

$6x^2+6=37x$

$6x^2-37x+6=0$

$6x^2-36x-x+6=0$

$6x(x-6)-(x-6)=0$

$(6x-1)(x-6)=0$

$x=1/6,6$

$x^2=1/36, 36$

Option b is correct

29) Answer: C

Solution:

Let the two numbers are x and y (x>y)

x-y =2

y/x=14/15 (As, 15>14)

y/x =14a/15a

x-y=15a-14a=a

As, x-y=2 given therefore, a=2

x+y=15a+14a

=29a=29*2

=58

30) Answer: D

Solution:

Let the three consecutive odd numbers are (x-2), x, (x+2)

Sum of those three numbers= 51

(x-2)+x+(x+2)=51

3x=51

x=17

Since largest of three is (x+2) =17+2=19

31) Answer: C

Solution:

Let the numbers are: (x-a), x , (x+a)

a is the difference between the consecutive numbers

Largest number - smallest number =8

(x+a)-(x-a) = 8

2a = 8

A = 4

Middle number +last number=60

x+(x + a) = 60

2x + 4 = 60

X = 28

Smallest number = x – a

= 28 – 4 = 24

32) Answer: A

Solution:

Let the three numbers are: x/a, x, ax

a be the ratio between the two numbers

Smallest number*largest number = 16

x/a*ax=16

$x^2=16$

x=±4

x=4(As all the numbers are natural numbers, neglect the negative value)

Largest number - middle number =4

ax-x=4

x(a-1)=4

a-1=1

a=2

Cube of largest number= $(ax)^3$

= $(2*4)^3$

= 512

33) Answer: B

Solution:

Let the number be: x and y

$x^2+y^2=145$ ----(1)

$x^2-y^2=17$ -----(2)

(1)+(2)=> $2x^2=162$

$x^2=81$, x=9

Put the value of x^2 in (1)

Then, $y^2=145-81=64$

y=8

x+y=9+8

=17

34) Answer: D

Solution:

Given:

xyz=300 ---(1)

x/y=5/6 ----(2)

y/z=3/5 ---(3)

Product of above three equation=(xyz)(x/y)(y/z)

$x^2y=150$ ---(3)

From (2) y=6x/5

(3)=> $x^2(6x/5)=150$

$x^3=125$

35) Answer: A

Solution:

Let the two numbers are x and y (x>y)

Sum of two numbers=3*difference between the two numbers

x+y =3(x-y)

x+y=3x-3y

4y=2x

x:y=2:1

36) Answer: C

Solution:

Let the number be x

x+3x/4=2x-4

7x/4=2x-4

x/4=4

x=16

x^2=256

37) Answer: C

Solution:

Let the numbers be (x-a) , x, (x+a)

a be the difference between the consecutive number

x-a+x+x+a=489

3x=489

x=163

Since smallest number is 6 less than the largest number.

(x-a) =(x+a)-6

-2a=-6

a=3

Largest number =x+a

=163+3=166

38) Answer: C

Solution:

Let the consecutive natural numbers are n and n+1

Difference between the squares of the two,

= $(n+1)^2-n^2$

= $n^2+2n+1- n^2$

= 2n+1

39) Answer: A

Solution:

Sum of the cube of first n natural number =

$(n (n +1)/2)^2$

$8^3+9^3+……..+14^3=(1^3+2^3+3^3+……..+14^3)-(1^3+2^3+3^3+……..+7^3)$

Apply the formula,

$12^3+13^3+……..+22^3 = (14*15/2)^2-(7*8/2)^2$

$=7^2(15^2-4^2)$

=209*49=10241

40) Answer: D

Solution:

Let the number be x.

Twice of its reciprocal= 2/x

x-2/x=71/6

x^2-2=71x/6

$6x^2$-12=71x

$6x^2$-71x -12=0

$6x^2$-72x +x-12=0

6x(x-12)+(x-12)=0

x=12, x=-1/6

As, only natural number is to be considered then the negative number has to be neglected.

The required number=12

41) Answer: C

Solution:

= (5 4/7 + 4 3/14 –5 2/21) ÷(1/7)

= [(5+4-5)+(4/7 + 3/14 – 2/21)]×7

= 4+[(24+9-4)/42] ×7

= [4 (29/42)] ×7

= (197/42) ×7

= 197/6

= 32.83

42) Answer: A

Solution:

= (0.9×0.009×0.81)÷(0.0729)

= (0.9×0.009×0.9×0.9)÷(729×10^{-4})

= ($9\times10^{-1}\times9\times10^{-3}\times9\times10^{-1}\times9\times10^{-1}$)÷($729\times10^{-4}$)

= ($729\times9\times10^{-6}$) ÷(729×10^{-4})

=9×10^{-2}

=0.09

43) Answer: C

Solution:

= 12+15+18+21+24+……+99

= 3(4+5+6+7+8+……33)

= 3[(1+2+3……+33) – (1+2+3)]

As sum of n natural numbers = n(n+1)/2

= 3[((33*34)/2)-6]

= 3[561-6]

= 3*555

=1665

44) Answer: C

Solution:

$= 5^3+5^4+5^5+5^6+5^7$

$= 5^3(1+5+5^2+5^3+5^4)$

= 125(6+25+125+625)

=125*781

= (1000*781)/8

= 781000/8

=97625

45) Answer: D

Solution:

Sum of the squares of first n natural number = n(n+1)(2n+1)/6

= (35*36*71)/6

= 14910

46) Answer: B

Solution:

Let the number of columns =x

Then the number of rows= x+6

As 616 trees need to be planted in this area, then

x(x+6)=616

x^2 +6x-616=0

x^2 +28x-22x-616=0

x(x+28)-22(x+28)=0

x=22,-28

Neglect negative value then x=22

Number of rows=x+6

= 22+6=28

47) Answer: D

Solution:

= 1-2-4-6-8-10-12-14-……..-46

= 1-2(1+2+3+……+23)

=1-2(23*24/2)

=1-552

= -551

48) Answer: A

Solution:

Let the three numbers are (a-2), a, (a+2)

Sum of three numbers=45

a-2+a+a+2=45

3a=45

a=15

(a-2)=13

(a+2)=17

Product of three numbers=(a-2)a(a+2)

=13*15*17 =3315

49) Answer: C

Solution:

$(6^2+6^5)\div 93=42\times 2^a$

$6^2(1+6^3)\div 93=42\times 2^a$

$(36*217)/93=42\times 2^a$

$84=42\times 2^a$

$2=2^a$

On comparing the powers, a=1

50) Answer: C

Solution:

$2541-1456+3254=x^2+(75\times 260\times 13/78)$

$4339= x^2+3250$

$x^2=1089$

$x=33$