

47. Find the value of  $(625)^{0.07} \times (625)^{0.18}$ .

$(625)^{0.07} \times (625)^{0.18}$  का मान ज्ञात कीजिए।

[A] 25

[B] 625

[C] 5 ✓

[D] 125

$$= 625^{0.07+0.18} = 625^{\frac{1}{4}} = 5$$

$$a^m \times a^n = a^{m+n}$$

$$a^{\frac{1}{n}} = \sqrt[n]{a}$$



**48. Evaluate:**  $\sqrt[3]{-125} + \sqrt[3]{0.008} + \sqrt[3]{0.343} - \sqrt[3]{-0.009261}$

**मूल्यांकन कीजिये :**  $\sqrt[3]{-125} + \sqrt[3]{0.008} + \sqrt[3]{0.343} + \sqrt[3]{-0.009261}$

[A] -4.31

[B] -5.51

[C] ~~25.1~~

[D] ~~0.21~~

$$-5 + 0.2 + 0.7 - 0.2$$

$$= 0.9 - 0.2$$

$$= 0.7$$



49. If  $\sqrt{1521} = 39$ , then find the value of  $\sqrt{15.21} + \sqrt{0.1521} + \sqrt{0.001521} + \sqrt{0.00001521} + \sqrt{0.0000001521}$  up to two places of decimals?

यदि  $\sqrt{1521}=39$ , तो  $\sqrt{15.21} + \sqrt{0.1521} + \sqrt{0.001521} + \sqrt{0.00001521} + \sqrt{0.0000001521}$  का मान दशमलव के दो स्थानों तक ज्ञात कीजिए?

**DSSSB HEAD CLERK 2022**

[A] 4.11

[B] 4.33

[C] 4.77

[D] 4.55

$$\begin{array}{r} 3.9 \\ .39 \\ .039 \\ .0039 \\ + .00039 \\ \hline 4.33329 \end{array}$$



50. Given that  $\sqrt{19} = 4.35$  &  $\sqrt{190} = 13.78$ , then the value of  $\sqrt{1.9} + \sqrt{1900} + \sqrt{0.019}$  will be equal to?

दिया गया है कि  $\sqrt{19} = 4.35$  &  $\sqrt{190} = 13.78$ , तो  $\sqrt{1.9} + \sqrt{1900} + \sqrt{0.019}$  का मान किसके बराबर होगा?

[A] 43.0142

[C] 46.0186

[B] 45.0158

[D] 48.0542

$$= 1.378 + 43.5 + 13.78$$

$$= 45.0158$$

$$\sqrt{0.190} = \cancel{13.78} = 1.378$$

$$\sqrt{\frac{190}{100}} = \frac{13.78}{10}$$

$$\sqrt{1.9} = 1.378$$

$$\sqrt{19 \times 100} = 4.35 \times 10$$



51. If  $47.2506 = 4A + \frac{7}{B} + 2C + \frac{5}{D} + 6E$  then  $5A + 3B + 6C + D + 3E = ?$

(A) 53.6003

(C) 153.6003

(B) 53.6012

(D) 213.003

$50 + 3 + \cdot 6 + 100 + \cdot 0003$

$$4 \times 10 + 7 \times 1 + \frac{2}{10} + \frac{5}{100} + \frac{6}{10000}$$

$$A = 10$$

$$B = 1$$

$$C = \frac{1}{10} = .1$$

$$D = 100$$

$$E = .0001$$





$$784.326$$

$$= \underline{784} + \underline{.326}$$

$$= 7 \times 100 + 8 \times 10 + 4 + \frac{3}{10} + \frac{2}{100} + \frac{6}{1000}$$



52. How many digits will be there after the decimal point in the product of 0.325 and 1.0302?

0.325 और 1.0302 के गुणनफल में दशमलव बिंदु के बाद कितने अंक होंगे?

(DP CONSTABLE 2023)

[A] 8

[C] 5

[B] 7

[D] 6

$$\overset{\text{---}}{\cdot 325} \times \overset{\text{---}}{1.0302} \rightarrow \dots \times \text{---}$$

$$5 \times 2 = 10$$



**53. When 63558 is divided by 321, the quotient is 198. What will be the quotient when 6.3558 is divided by 0.0198?**

जब 63558 को 321 से विभाजित किया जाता है, तो भागफल 198 होता है। जब 6.3558 को 0.0198 से विभाजित किया जाता है, तो भागफल क्या होगा?

**UP POLICE ASSISTANT OPERATOR 2024**

[A] 3.21

[B] 321

[C] 32.1

[D] 3210

$$\frac{63558}{10198} = 321$$



**54. If  $16.5 \times 35.5 = 585.75$ , then find the value of  $58.575 \div 0.165$ .**  
यदि  $16.5 \times 35.5 = 585.75$  है, तो  $58.575 \div 0.165$  का मान ज्ञात कीजिए।

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**[A] 355**

**[B] 35.5**

**[C] 3.55**

**[D] 0.355**



55.  $331 \times 226 = 74806$ . What will be the value of  $3.31 \times 0.226$ ?  
 $331 \times 226 = 74806$  होता है।  $3.31 \times 0.226$  का मान कितना होगा?

**RRB NTPC 2021**

[A] 0.74806

[B] 7.4806

[C] 0.074806

[D] 74.806





$$1 + \textcircled{2} + 1 = 2^2$$

$$1 + 2 + \textcircled{3} + 2 + 1 = 3^2$$

$$1 + 2 + 3 + \textcircled{4} + 3 + 2 + 1 = 4^2$$

$$\sqrt{1 + \textcircled{2} + 1} = 2 \checkmark$$

$$\sqrt{1 + 2 + \textcircled{3} + 2 + 1} = 3 \checkmark$$

$$\sqrt{1 + 2 + 3 + \textcircled{4} + 3 + 2 + 1} = 4 \checkmark$$

$$1^2 = 1$$

$$11^2 = \overline{121}$$

$$111^2 = \overline{12321}$$

$$1111^2 = \overline{1234321}$$

$$11111^2 = \overline{123454321}$$

$$\sqrt{1234567654321} = \text{|||||||}$$





$$3^2 = 09$$

$$6^2 = 36$$

$$9^2 = 81$$

$$33^2 = 1089$$

$$66^2 = \underline{4356}$$

$$99^2 = \underline{9801}$$

$$333^2 = \underline{110889}$$

$$666^2 = \underline{443556}$$

$$3333^2 = \underline{111108889}$$

$$999999^2 = \underline{9999800001}$$

only for 3, 6 & 9  $\Rightarrow$





$$\sqrt{4444355556} = 66666 \checkmark$$





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

$$1^3 + 6^3 + 8^3 = 9^3$$

$$3333^3 + 4444^3 + 5555^3 = 6666^3$$

तो  $6666 = 6666$  ✓



56. *Simplify:*

$$1 + 2 + 3 + \dots + 999 + 1000 + 999 + \dots + 2 + 1$$

[A] 999000

[B] 1000000

[C] 999999

[D] 990000

$= 1000^2$



**57.** *Simplify:*

$$\sqrt{1 + 2 + 3 + \dots + 78 + 79 + 78 + \dots + 2 + 1} = ?$$

[A] 78

[C] 79

$$= 79$$

[B] 6084

[D] 6241



58.  $\sqrt{1 + 2 + 3 + \dots + (2N - 2) + (2N - 1) + 2N + (2N - 1) + (2N - 2) + \dots + 2 + 1} = 90$

Find the value of  $N^2$ .

[A] 1600

[C] 2500

[B] 2025

[d] 8100

$$2N = 90$$

$$N = 45$$

$$N^2 = 2025$$



59.  $\sqrt{(11111 - \dots - 100\text{times}) - (22222 - \dots - 50\text{times})} = ?$

[A]  $(11111 - \dots - 100\text{times})$

[B]  $(11111 - \dots - 50\text{times})$

~~[C]  $(33333 - \dots - 100\text{times})$~~

~~[D]  $(33333 - \dots - 50\text{times})$~~

$\sqrt{11 - 2} = 3$

$\sqrt{1111 - 22} = 33$

⋮



60. If  $x = 111 \dots 1$  (20 digits),  $y = 333 \dots 3$  (10 digits) and  $z = 222 \dots 2$  (10 digits), then what is  $\frac{x-y^2}{z}$  equal to?

[A]  $\frac{1}{2}$

[C] 2

[B] 1

[D] 3

$$\frac{11-3^2}{2} = 1$$

$$\frac{1111-33^2}{22} = 1$$

⋮

$$x = 11, 1111$$

$$y = 3, 33$$

$$z = 2, 22$$



61.  $(6666666 \dots \dots \dots 100 \text{ times})^2 + (8888888 \dots \dots 100 \text{ times}) = ?$

[A] ✓ (444.....200 times)

[B] (2222.....~~200~~ times)

[C] (44444.....100 ~~times~~)

[D] (55555.....~~100~~ times)

$$6^2 + 8 = 44$$

$$66^2 + 88 = 4444$$

⋮





62. If  $N = 1 + 11 + 111 + 1111 + \dots + 111111111$ , then what is the sum of the digit's of  $N$ ?

यदि  $N = 1 + 11 + 111 + 1111 + \dots + 111111111$  हो, तो  $N$  के अंकों का योग क्या है?

[A] 45

[B] 18

[C] 36

[D] 5

$$= \frac{9 \times 10}{2}$$

$$N = 123456789$$



63.  $\sqrt{121} + \sqrt{12321} + \dots + \sqrt{1234567654321} = ?$

~~[A]~~ 1234567

[B] 1234566

[C] 1234565

[D] None

$$|| + ||| + \dots + ||||| = 1234567 - 1$$



64.  $\sqrt{121} + \sqrt{12321} + \dots + \sqrt{N} = \underline{123456789}$ . Find the value of  $N$ .

[A] 123456787654321

[B] 1234567654321

[C] 12345654321

[D] None

$$N = \underline{12345678987654321}$$



# ALGEBRA BASED SIMPLIFICATION FORMULAS



- $a^2 - b^2 = (a + b) \cdot (a - b)$

- $\frac{a^2 - b^2}{a + b} = a - b$  ✓

- $\frac{a^2 - b^2}{a - b} = a + b$

**65.** *The value of  $596 \times 604$  is:*

**$596 \times 604$  का मान ज्ञात कीजिए।**

**[A] 364199** ✗

**[B] 366958** ✗

**[C] 356822** ✗

**[D] 359984** ✓

$$= (600 - 4) \times (600 + 4)$$

$$= 600^2 - 4^2$$

$$= 360000 - 16$$



66. Find the value of  $98.2^2 - 88.2^2$ .

**$98.2^2 - 88.2^2$  का मान ज्ञात कीजिए।**

[A] 186.4

[C] 1846

[B] 1864

[D] 100

$\rightarrow = 1864 \times 10$



67. Simplify the expression  $((82 \times 82) - (18 \times 18))^{0.5}$   
व्यंजक  $[(82 \times 82) - (18 \times 18)]^{0.5}$  को हल कीजिए।

[A] 100

[B] 20

[C] 40

[D] 80

$$(100 \times 64)^{\frac{1}{2}} \\ = 80$$



68. The value of  $\frac{18.43 \times 18.43 - 6.57 \times 6.57}{11.86}$  is:

$\frac{18.43 \times 18.43 - 6.57 \times 6.57}{11.86}$  का मान है:

[A] 23.62

[B] 25

[C] 26

[D] 24.12

$$= \frac{\cancel{11.86} \times 25}{\cancel{11.86}}$$



69. 0. If  $A = \frac{58^2 - 25^2}{46^2 - 37^2}$ ,  $B = \frac{26^2 - 15^2}{56^2 - 15^2}$ , then the value of  $\frac{1}{B} - \frac{20}{A}$  is:

यदि  $A = \frac{58^2 - 25^2}{46^2 - 37^2}$ ,  $B = \frac{26^2 - 15^2}{56^2 - 15^2}$  है, तो  $\frac{1}{B} - \frac{20}{A}$  का मान क्या होगा?

**(MAINS 2023)**

[A] 2

[B] 0

[B] 1

[D] -1

$$= \frac{71}{11} - \frac{20 \times 3}{11} = \frac{11}{11}$$

$$A = \frac{33 \times \cancel{83}}{9 \times \cancel{83}} = \frac{11}{3}$$

$$B = \frac{11 \times \cancel{41}}{\cancel{41} \times 71} = \frac{11}{71}$$

70. What is the value of  $(2^2 + 1)(2^4 + 1)(2^8 + 1)(2^{16} + 1) \dots (2^{128} + 1)$ ?

$(2^2 - 1) \times (2^2 + 1)(2^4 + 1)(2^8 + 1)(2^{16} + 1) \dots (2^{128} + 1)$  का मान क्या है?

$(2^2 - 1)$   
[A]  $\frac{2^{256} - 1}{2}$

[B]  $\frac{2^{256} - 1}{3}$

[C]  $2^{256} - 1$

[D]  $\frac{2^{256} + 1}{3}$

$$= \frac{2^{256} - 1}{3}$$

$$(2^2 - 1) \cdot (2^2 + 1) = (2^2)^2 - 1 = 2^4 - 1$$

$$(2^4 - 1) \cdot (2^4 + 1) = 2^8 - 1$$

