

$$2^{2^3} \downarrow$$

$$2^8$$

$$2^{3^2} \downarrow$$

$$2^9$$

$$(2^3)^2$$

$$2^6$$

$$(2^2)^3$$

$$2^6$$

$$\begin{array}{|c|} \hline 38 \\ \hline 37 \\ \hline \end{array} \quad \boxed{R=1}$$

$2 \xrightarrow{4 \text{ Unit}} 2' = 2 \text{ Ans.}$

$$\frac{\textcircled{1} 38}{37} = 1 \quad \frac{\textcircled{1} 87}{81} = 1$$

$$\left(2^{37} \right)^{38} \rightarrow 2^{1 \times 2} \frac{37 \times 38}{4} = \boxed{R \rightarrow 2}$$

$2^2 \rightarrow 4^{V.D}$

$$\frac{\left(\overset{+1}{37} \right)^{38}}{4} = \overset{\text{Rem}}{(1)} = 1$$

$$6 \xrightarrow{2^9} \frac{38}{37} \rightarrow \frac{U.D}{6}$$

$$4 \xrightarrow{81^{87}} \boxed{R \rightarrow 1}$$

$4' = 4^{U.D}$

$$(4^{81})^{82} \rightarrow 4^{\frac{81 \times 82}{4}} = 2$$

$$4^2 \rightarrow 16$$

14. $2^{3^4} \times 3^{4^5} \times 4^{5^6} \times 5^{6^7} \times 6^{7^8} \times 8^{9^{10}} = \text{Unit digit/ इकाई अंक-}$

- (a) 4 (b) 0 (c) 2 (d) 9

$$3^4 \rightarrow 3 \times 3 \times 3 \times 3$$

$$\frac{(5^1)^6}{4} = (1)^6 = 1$$

$$\frac{(9^1)^{10}}{4} R \rightarrow 1$$

$$\frac{81}{4} R \rightarrow 1 \quad \boxed{3^4} \quad \boxed{5^6} \quad \boxed{6^7} \quad \boxed{9^{10}}$$

$$2 \times 4 \times 6 \times 8$$

$$2^1 \times 4^1 \times 6^1 \times 8^1$$

$$2 \times 4 \times 6 \times 8 = \text{U.D} = 4$$

- (i) 1 ✓
 (ii) 2 ✓
 (iii) 3 ✓
 (iv) R=0

$$1^4 + \dots + 10^4$$

U.D = 3

$$\textcircled{1} \quad (1, 0, 5, 6) \xrightarrow{\text{U.D}} \text{No Change}$$

$$\left(\dots 1 \right) \xrightarrow{\text{U.D}} 1$$

$$\left(\dots 0 \right) \xrightarrow{\text{U.D}} 0$$

$$\left(\dots 5 \right) \xrightarrow{\text{U.D}} 5$$

$$\left(\dots 6 \right) \xrightarrow{\text{U.D}} 6$$

$$\# \quad \binom{29}{231} - \binom{12}{25}$$

$$1 - 5 = \textcircled{-4}$$

$$10 - 4 = \underline{6 \text{ Ans}}$$

Note →

(ii) 1, 0, 5, 6 को छोड़कर यदि power में $(3!)$ से बड़ी हो तो सम संकेतों का अंक हमेशा (6) तथा विषम संकेतों का अंक हमेशा (1) होती है।

(1)

$$12 \xrightarrow{V.D} 6$$

(2)

$$(23) \xrightarrow{V.D} 1$$

(3)

$$129 + 328 + 125 + 322 + 123$$
$$1 + 6 + 5 + 6 + 1 = 19$$

$$V.D = 9$$

$$\textcircled{4} \quad (12342) \xrightarrow{\text{V.D.}} \overset{1 \times 2 \times 3 \times \dots \times 10!}{=} (1234\underline{2}) \xrightarrow{\overline{10!}} 6$$

15. Find out the unit digit in $\underline{12}$ —

$\underline{12}$ में इकाई का अंक ज्ञात करो—

~~(a) 0~~

(b) 2

(c) 4

(d) 5

$$4! +$$

16. Find out the unit digit—

व्यंजक में इकाई का अंक ज्ञात करो—

$$888^{9235!} + 222^{9235!} + 666^{2359!} + 999^{9999!}$$

(a) 5

~~(b) 9~~

(c) 3

(d) Not

$$\begin{array}{ccccccc}
 888^{9235!} & + & 222^{9235!} & + & 666^{2359!} & + & 999^{9999!} \\
 6 & + & 6 & + & 6 & + & 1 = 19
 \end{array}$$

17. Find out digit / इकाई का अंक ज्ञात करो-

$$(\underline{1})^{\underline{1}} + (\underline{2})^{\underline{2}} + (\underline{3})^{\underline{3}} + (\underline{4})^{\underline{4}} + \dots + (\underline{100})^{\underline{100}}$$

$$4! + \frac{V \cdot D}{\rightarrow} = 0$$

~~(a) 7~~

(b) 8

(c) 6

(d) 9

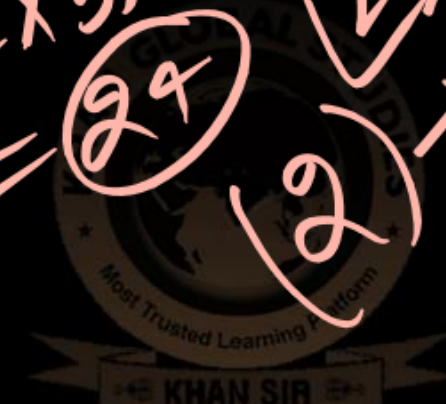
$$(\underline{1})^{\underline{1}} + (\underline{2})^{\underline{2}} + (\underline{3})^{\underline{3}} + (\underline{4})^{\underline{4}} + (\underline{5})^{\underline{5}} + (\underline{6})^{\underline{6}} + \dots + (\underline{100})^{\underline{100}}$$

$$(1)^1 + (2)^2 + (6)^6 + (24)^4 + 0$$

$$\underline{1} + 4 + 6 + 6 = \underline{17}$$

$$\sqrt{4} \rightarrow 4 \times 3 \times 2 \times 1 = 24$$

$$\sqrt{257} \rightarrow 6$$



$$\# \quad \begin{array}{c} 1 + 1 + 2 + 6 + 24 \\ \underline{L_0} + \underline{L_1} + \underline{L_2} + \underline{L_3} + \underline{L_4} \end{array} \Bigg| + L_5 + L_6 + \dots + \underline{L_{12} L_{23}}$$

$U \cdot D = 0$

$$34 + 0 = 4^{U \cdot D}$$

18. What is the unit digit of / इकाई अंक बतओ $7^{11^{22^{27}}}$

(a) 1

(b) 3

(c) 7

(d) 9

$$\frac{7^{11^{22^{27}}}}{4} \quad \boxed{R \rightarrow 1}$$

$$7^1 = 7$$

$$\frac{(11)^{22^{27}}}{4} = 1$$

$$\frac{11}{4} \begin{matrix} \nearrow +3 \\ \rightarrow -1 \end{matrix}$$

(i) (-) ^{सम} $\rightarrow +ve$

(ii) (-) ^{विषम} $\rightarrow -ve$

(iii) (Even)ⁿ \rightarrow Even

(iv) (odd)ⁿ \rightarrow odd

$$\frac{8 \quad 23 \quad 24 \quad 25}{4} \rightarrow \boxed{R \rightarrow 1}$$

$$8^1 = 8$$

$$\frac{7 \quad 11 \quad 23 \quad 28}{4} \rightarrow \boxed{R \rightarrow 3}$$

$$7^3 = 34 \boxed{3} \xrightarrow{V.D.} 3$$

$$\frac{\binom{-1}{23}}{4} = \binom{+1}{25} \quad (-) \xrightarrow{\text{odd}} \text{ve}$$

$$\frac{\binom{-1}{11}}{4} = \binom{-1}{28} \quad R \rightarrow 4^{-1} = \boxed{3}$$

132 $\xrightarrow{\text{35 37 39}}$ $R=3$

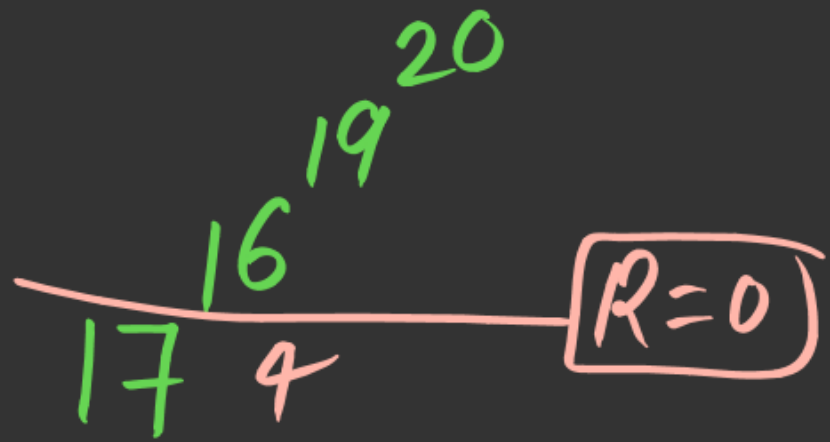
V.D = $2^3 = 8$

13 $\xrightarrow{\text{27 28 29}}$ $2^1 = 2$

$\frac{\binom{-1}{35}}{4} = -1$

Rem $\rightarrow 4^{-1} = 3$

$\frac{\binom{-1}{27}}{4} = +1$



$7^4 \rightarrow \text{UD} \textcircled{1}$

19. x and y are the digits at the unit's place of the number $(408x)$ and $(789y)$ where $x \neq y$. However digit at the unit place of the number $(408x)^{63}$ and $(789y)^{85}$ are the same. What will be possible value of $x + y$.

x और y $408x$ और $789y$ के अंतिम अंक है जहाँ $x \neq y$ यदि $(408x)^{63}$ का अंतिम अंक $(789y)^{85}$ के अंतिम अंक के बराबर है तो $x + y$ का संभवत मान क्या होगा?

(a) 9

(b) 10

(c) 11

(d) 12

~~0
1
5
6~~

$x+y$
 $3+7$
 $2+8$

2^3
 2^3
 3^3
 3^3
 11
 11
 11
 11
 805
 805

$$(408x)^{\frac{63}{4}} = (789y)^{\frac{85}{4}}$$

$R \rightarrow 1$
 $\frac{85}{4}$

20. Find unit digit of/ इकाई अंक बताओ-

$$29^{136} \quad R=0$$

~~(a) 1~~

(b) 3

(c) 7

(d) 9

$$9^4 \rightarrow 1$$

21. $(2467)^{\frac{153}{4}} \times (341)^{72} =$ Find unit digit/ इकाई अंक बताओ-

(a) 7

(b) 1

(c) 3

(d) 9

$$7 \times 1$$

$$7 \times 1 = 7$$

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