Ⅰ product

Ⅱ Factorial

Ⅲ Series

Ⅳ ± 1

Ⅴ Totient

$\boxed{125}$

Simplified Remainder theorem

$$\overset{-1}{1363} \times 14\overset{-1}{79} \times 15\overset{-1}{27} \times 1931 \times \overset{+1}{\underset{5}{\cancel{625}}}$$

$$\underset{\underset{4}{\cancel{500}}}{} = 1$$

Rem $\rightarrow 1 \times 125$

$\boxed{125}$

$$\boxed{125}$$

$$\frac{\overset{\textcircled{3}}{14\cdot93} \times \overset{\textcircled{2}}{4952} \times \overset{\textcircled{3}}{4853} \times \overset{\textcircled{-1}}{7329} \times \overset{\textcircled{-1}}{1434} \times \overset{\textcircled{3}}{\cancel{375}}}{\cancel{625}} = \frac{54}{5} \quad \boxed{R \to 4}$$

$$\underset{5}{}$$

$$Rem \to 4 \times 125$$
$$= 500 \; \underline{\underline{Ans}}.$$

$$\boxed{125}$$

$$\overset{\underset{\displaystyle -2}{\bigcirc}}{14\underline{93}} \times \overset{\underset{\displaystyle -3}{\bigcirc}}{49\underline{52}} \times \overset{\underset{\displaystyle -2}{\bigcirc}}{485\underline{2}} \times \overset{\underset{\displaystyle -1}{\bigcirc}}{732\underline{9}} \times \overset{\underset{\displaystyle -1}{\bigcirc}}{143\underline{4}} \times \overset{\overset{\underset{\displaystyle -2}{\bigcirc}}{3}}{\cancel{375}} = \frac{24}{5} \; R \rightarrow \overset{\displaystyle -1}{\bigcirc}$$

$$\frac{\cancel{625}}{5}$$

$$Rem \rightarrow 5-1$$

$$= \boxed{4}$$

$$\downarrow \times 125$$

$$\boxed{500}$$

$\boxed{4}$

$$\#\quad \frac{299 \times \overset{\overset{87}{248}}{\cancel{248}} \times 723 \times 529 \times 349}{\underset{25}{\cancel{100}}} = \frac{-96}{25}$$

(-1) $(+12)$ (-2) $(+4)$ (-1)

के अंतिम दो अंक निकालें।

(-4)

$R = 4$

$\xrightarrow{\times 4}$

$\boxed{16}$ Last two digit

(i) अंतिम ① अंक $\longrightarrow \div 10$

(ii) अंतिम ② अंक $\longrightarrow \div 100$

(iii) अंतिम ③ अंक $\longrightarrow \div 1000$

(iv) अंतिम ④ अंक $\longrightarrow \div 10000$

Factorial (क्रम गुणित)

$$n! \,, \lfloor n$$

$\lfloor 0 = 1$

$\lfloor 1 = 1$

$\lfloor 2 = 2$

$\lfloor 3 = 3 \times 2 \times 1 = 6$

$\lfloor 4 = 4 \times 3 \times 2 \times 1 = 24$

$\lfloor 5 = 120$

$\lfloor 6 = 720$

$\lfloor 7 = 5040$

$1 + 2 + 6 \, \cancel{+} \, 24 \checkmark \qquad R = 0$

① $\dfrac{\lfloor 1 + \lfloor 2 + \lfloor 3 + \lfloor 4 + \lfloor 5 + \cdots \cdots + \lfloor 33}{8} \quad R \rightarrow$

$\dfrac{9}{8} \boxed{R \rightarrow 1}$

$1 + 1 + 2 + 6 + 24 \qquad R = 0$

② $\dfrac{\lfloor 0 + \lfloor 1 + \lfloor 2 + \lfloor 3 + \lfloor 4 + \lfloor 5 + \cdots \cdots + 529!}{12} \quad R =$

$\dfrac{10}{12} \; \boxed{R = 10}$

$$1 + 2 + 6$$

③ $\quad \underline{L1 + L2 + L3 + L4 + L5 + \cdots \cdots + L19} \qquad R = 0$

$$\underline{\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad} \quad R =$$

$$L4 = 24$$

$$\frac{9}{24} \quad \boxed{R \to 9}$$

#IncreaseRailwayALPVacancy

ⓐ 9 सही

ⓑ 8

ⓒ 10

ⓓ 1

Series

$$2^n \mid 5^n$$

$$125 \to 5\,\textcircled{3}$$

$$5 \to 5^1$$
$$\textsf{L}25 \to 5^2\,\textcircled{2}$$
$$\textsf{L}25 \to 5\,\textcircled{3}$$

① $1\ 2\ 3\ 4\ 5\ 6\ 7\ 8 \cdots\cdots 86\ 87\cdot8\boxed{889}$ $R =$

$$\boxed{\textcircled{125}}$$

$$5 \to 5\,\textcircled{1}$$

$$\begin{array}{r} 125\,\overline{)\,889\,}(7 \\ 875 \\ \hline 14 \end{array}$$

$$25$$
$$125$$

$$\frac{889}{125}\quad R = \textcircled{14}$$

$$\textcircled{625} \to 5^4$$

② $2\ 3\ 5\ 7\ 11\ 13 \cdots\cdots - 89\ ^{97}$ $R = .3$
$$\overline{\qquad\qquad\qquad}$$
$$8$$

$$\frac{997}{8}\quad 8\cdot3 \quad \text{// ANS}$$

$\dfrac{13579 \cdots\cdots\cdots 8789}{16}$ $R \rightarrow$

$16 \rightarrow \overset{④}{\underset{2}{2}}$

$\boxed{2^n \mid 5^n}$

$(0, \cdots\cdots 9)$

Note:→ एक अंको की सं० को 6 बार या 6 के गुणज में लिखी गई सं० ③.⑦, 11, 13 तथा 37 से पूर्णतः विभाजित होती है।

999999, 999999 999999, 9999 · · · · 18बार, 999 · · · · 24बार

3333 · · · 30बार, 2222 · · · · 36बार, 77777 · · · · 54बार 8888 · · · · 96बार

① $\dfrac{333333\ \cdots\ \cdots\ \overset{96|\overset{+2}{}}{98\text{बार}}\ \checkmark}{13.}$ $R=$

$$6)\ \overline{98}\ (16$$
$$\underline{96}$$
$$②$$

2 बार Extra है।

$\dfrac{33}{13}$ $\boxed{R\to 7}$

② $\dfrac{4\,4\,4\,4\,4\,4\,4\ \cdots\ \cdots\ \overset{102\text{बार}\,|\,+3\text{बार}}{105\text{बार}}}{21}$ $R=$

$\dfrac{444}{21}$ $R\to\ \underline{3\,Ans}$

$$6)\ \overline{105}\ (17$$
$$\underline{102}$$
$$③\ \text{बार}\ Extra$$

③ $\dfrac{55555\ \cdots\ \cdots\ \overset{3672\text{बार}}{}}{37}$ $\boxed{R=0}$

$$6)\ \overline{3672}\ (612$$
$$\underline{3672}$$
$$XXXX$$

(i) $ab \times 101 = abab$

(ii) $abc \times 1001 = abcabc$ ✓

(iii) $ab \times 10101 = ababab$ ✓

$1001 \rightarrow 7 \times 11 \times 13$

$\overline{24\,24\,24}$

(i) 2323
101

(ii) 242424
10101

(iii) 47474747
1010101

$$2323$$

$$23)\overline{2323}\,(101$$
$$23$$
$$\overline{xx\,23}$$
$$23$$
$$\overline{xx}$$

$$24)\overline{242424}\,(10101$$
$$24$$
$$\overline{xx\,24}$$
$$24$$
$$\overline{xx\,24}$$
$$24$$
$$\overline{xx}$$

123123
1001

243 243 243
100 1001

459 459 459 459
100 100 1001

$abc\,abc = 1001 \times abc$

$7 \times 11 \times 13$

$ababab = 10101$

$3, 7, 13, 37$

$\#\ 232323\big|2323 \cdots\cdots\cdots\big| 38\,\text{digit}$

$36 \big| \boxed{+2}$

37

$\dfrac{23}{37}$ $\overset{}{\underset{}{R \rightarrow 23}}$

$$\underline{232323|\,\text{------}\,\text{38digit}}$$
$$\overline{|37}$$

$$ababab \rightarrow 3, 7, 13, 37$$
$$abcabc \rightarrow 7 \times 11 \times 13$$

$$6)\overline{\,38\,}(6$$
$$\underline{36}$$
$$\boxed{2}\,\underline{digit}$$

$$\frac{23}{37}\quad \boxed{R \rightarrow 23}$$

\# $19191919 1919 \text{------} 99digit \quad R=?$
$$\overline{19191919}|13$$
$$\underline{1919}$$

$$\frac{191}{13}\quad \boxed{R \rightarrow 9}$$

$$6)\overline{\,99\,}(16$$
$$\underline{96}$$
$$3\,digit$$

\# 5245   9191 9191

191    $\boxed{919}$

$\underset{\bigcirc}{524}524|524 \cdots\cdots\cdots 104\,\text{digit}$
$$\frac{}{11} \qquad R=$$

$$\frac{52}{11} \quad \boxed{R \to 8}$$

$$11)\overset{\displaystyle 52}{\underset{\displaystyle \frac{44}{\boxed{8}}}{}}(4$$

$$6)\overset{\displaystyle 104}{\underset{\displaystyle \frac{102}{\boxed{2}}}{}}(17$$

$\cancel{x}\cancel{x}\cancel{x}$ (I) $aaaaaa \to 3|7|11|13|37$

(II) $ababab \to 3|7|13|37$

(III) $abcabc \to 7|11|13$

Totient method

$\phi \hookrightarrow$ दूहरान

(i) prime no. (अभाज्य सं0)

(i) $2 \longrightarrow \phi = 2 \times \left(1-\frac{1}{2}\right) = 2 \times \frac{1}{2} = 1$

(ii) $3 \longrightarrow \phi = 3 \times \left(1-\frac{1}{3}\right) = 3 \times \frac{2}{3} = 2$

(iii) $5 \longrightarrow \phi = 5 \times \left(1-\frac{1}{5}\right) = 5 \times \frac{4}{5} = 4$

(iv) $7 \longrightarrow \phi = 7 \times \left(1-\frac{1}{7}\right) = 7 \times \frac{6}{7} = 6$

(ii) composite no. (भाज्य सं0)

$31 \longrightarrow 30$

$53 \longrightarrow 52$

$\boxed{Note: \longrightarrow}$

$17 \xrightarrow{\phi} 16$

$\xrightarrow{\phi} 22$

$23 \xrightarrow{\phi} 28$

29

composite no. (भाज्य न०)

power को हटा देंगे.

(v) 12
(vi) 15
(vii) 16
(viii) 28

(i) $4 \longrightarrow 2^{(2)} \Rightarrow \phi = 4 \times \left(1-\frac{1}{2}\right) = 4 \times \frac{1}{2} = 2$

(ii) $6 \longrightarrow 2^{1} \times 3^{1} \Rightarrow \phi = 6 \times \left(1-\frac{1}{2}\right)\left(1-\frac{1}{3}\right) = 6 \times \frac{1}{2} \times \frac{2}{3} = 2$

(ix) 36

(iii) $8 \longrightarrow 2^{3} \Rightarrow \phi = 8 \times \left(1-\frac{1}{2}\right) = 8 \times \frac{1}{2} = 4$

(iv) $9 \longrightarrow 3^{2} \Rightarrow \phi = 9 \times \left(1-\frac{1}{3}\right) = {}^{3}9 \times \frac{2}{3} = 6$

$$12 \rightarrow \textcircled{2}^2 \textcircled{3}^1 \Rightarrow \phi = \cancel{12}^{\,2} \times \frac{1}{2} \times \frac{2}{3} = 4$$

$$28 \rightarrow \textcircled{2}^2 \times \textcircled{7}^1 \Rightarrow \phi = \cancel{28} \times \frac{1}{2} \times \frac{6}{7} = 12$$

$$15 \rightarrow \textcircled{3}^1 \times \textcircled{5}^1 \Rightarrow \phi = \cancel{15} \times \frac{2}{3} \times \frac{4}{5} = 8$$

$$36 \rightarrow \textcircled{2}^2 \times \textcircled{3}^2 \Rightarrow \phi = \cancel{36} \times \frac{1}{2} \times \frac{2}{3} = \textcircled{12}$$

$$16 \rightarrow \textcircled{2}^4 \Rightarrow \phi = \cancel{16} \times \frac{1}{2} = 8$$

$$
\begin{array}{r|l}
2 & 36 \\
\hline
2 & 18 \\
\hline
3 & 9 \\
\hline
 & 3
\end{array}
$$

Totient

$$\dfrac{x^n}{D} \quad \boxed{R \to ?}$$

$$\boxed{x, D \xrightarrow{HCF} \textcircled{1}}$$

$$\boxed{17 \to \phi = 16}$$

$$\dfrac{\left(12^{-5}\right)^{66}}{17}$$

$$\dfrac{5^{\frac{66}{16}\textcircled{2}}}{17} = 5^2 = \dfrac{25}{17} \boxed{R \to 8}$$

① Binomial theorem

② Totient

power को घटाना करना

संo को घटाना करना
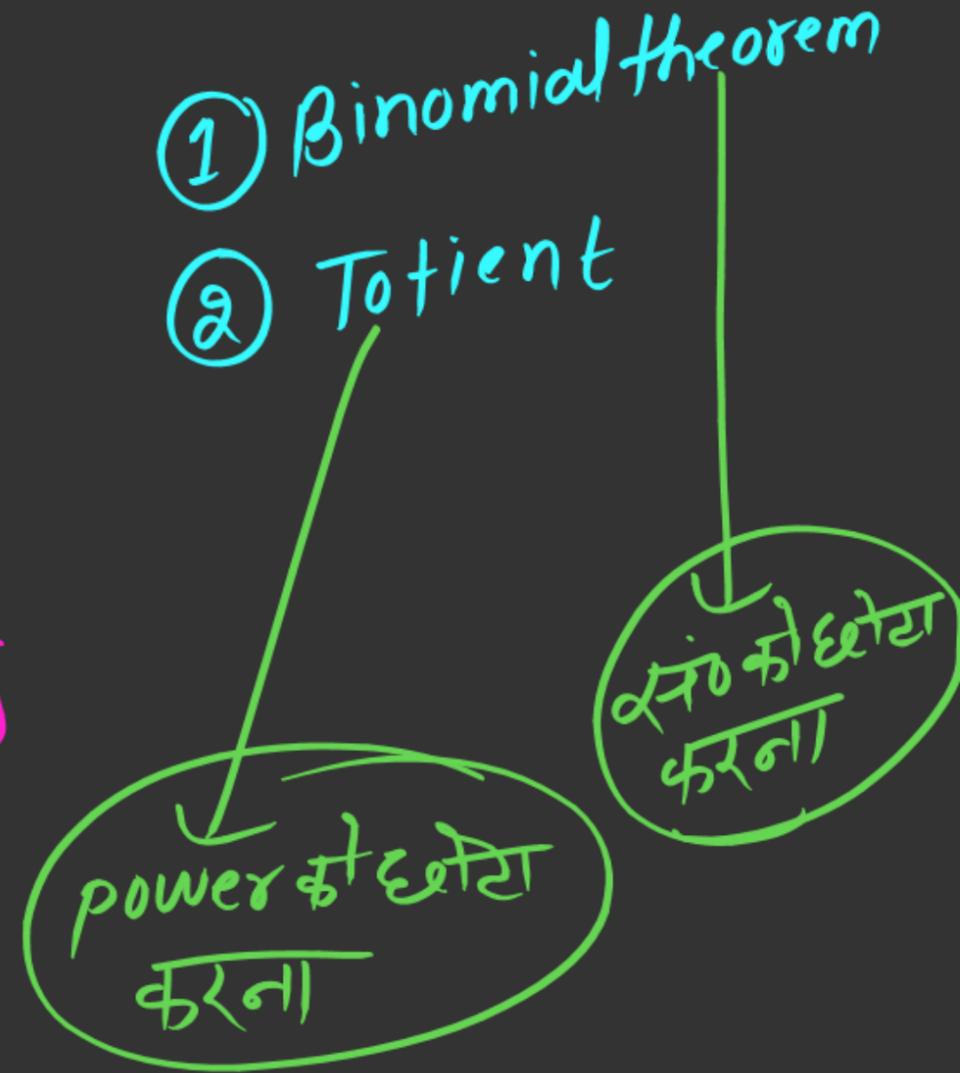
$\underline{\text{Totient}}$

$$\frac{x^n}{D} \quad \boxed{R \to ?}$$

$$\boxed{x, D \xrightarrow{HCF} ①}$$

$$\boxed{17 \to \phi = 16}$$

$$\frac{12^{\frac{66}{16}} \, ②}{17} = \frac{12^2}{17} = \frac{144}{17} \quad \boxed{R \to 8}$$

$$\frac{\left(\overset{③}{49}\right)^{92}}{23} = \frac{3^{\frac{92}{22}} = ④}{23} = \frac{3^4}{23} = \frac{81}{23}$$

$$\boxed{R \to 12}$$