



**DELHI POLICE 2025**  
**CONSTABLE HCM AWO/TPO DRIVER**

**यकीन बैच**

**MATHS**



**DELHI POLICE 2025**  
**CONSTABLE HCM AWO/TPO DRIVER**



**यकीन बैच**

**MATHS**

**Number System**

**(संख्या पद्धति)**

**Part -15**

**LIVE**  
STREAMING

**04-02-2025 11:00 AM**



Remainder theorem : ①

$$\begin{aligned} (-1)^{\text{odd}} &= -1 \\ (-1)^{\text{Even}} &= +1 \end{aligned}$$

$$8 \Rightarrow \frac{73}{9} \quad 10$$

$$= \frac{(2^3)^{24} \times 2^1}{9}$$

$$= \frac{(8)^{24} \times 2}{9}$$

$$= \frac{(-1)^{24} \times 2}{9}$$

$$= \frac{1 \times 2}{9} = \frac{2}{9}$$

Remainder

$$\begin{aligned} &\text{⑪} \quad \text{②} \quad \text{⑦} \quad \text{⑧} \\ &\quad \quad \quad \text{⑦} \end{aligned}$$

$$\frac{(2^3)^{24} \times 2^1}{9}$$

$$\frac{(8)^{24} \times 2}{9}$$

$$\frac{1 \times 2}{9} \text{ Remainder}$$

$$79 \Rightarrow \begin{array}{r} 273 \\ 3 \overline{) 81} \\ \underline{80} \end{array}$$

$$\frac{\cancel{273} \times \cancel{3}^1}{80} \text{ -- Permis}$$

$$\textcircled{\text{IV}} \begin{array}{r} 14 \quad 49 \quad 16 \\ 4 \overline{) 15} \end{array} \quad \frac{\cancel{49} \times 4}{15} = \text{Remainder}$$

$$\textcircled{\text{V}} \begin{array}{r} 515 \quad 64 \\ 4 \overline{) 63} \end{array}$$

$$\frac{\cancel{515} \times \cancel{4}^2}{63} = 16$$

$$\textcircled{\text{VI}} \begin{array}{r} 513 \\ 6 \overline{) 7} \\ (-1) \end{array} \quad \begin{array}{l} 513 \\ -1 + 7 = \underline{\underline{6}} \end{array}$$

$$\textcircled{\text{VII}} \begin{array}{r} 293 \\ 8 \overline{) 513} \end{array} \Rightarrow \frac{(8^3)^{97} \times 8^2}{513} \quad \frac{(512)^{97} \times 64}{513} = -1 \times 64 = -64 + 513 = \underline{\underline{449}}$$

## Fermat's Theorem :-

$$\text{Coprime } \frac{a^{p-1}}{p} = 1$$

prime

Ex:  $\frac{4^{42}}{43} = 1$

①  $D = \text{prime}$

② Power (Denominator से 1 कम होनी चाहिए)

③ Numerator / Denominator  
(common नहीं)  
कुछ भी होना चाहिए

$$\Rightarrow \frac{3^{\overline{40}}}{\overline{41}} = 1 \quad \text{(prime no.)}$$

$$\Rightarrow \frac{7^{\overline{52}}}{\overline{53}} = 1$$

$$\Rightarrow \frac{9^{\overline{82}}}{\overline{83}} = 1$$

$$\Rightarrow \frac{100^{\overline{100}}}{\overline{101}} = 1$$

$$\Rightarrow a) \frac{67^{\overline{60}} + 25}{68} = \frac{+1 + 25}{68} = \frac{26}{68} \rightarrow \text{Remainder}$$

$$b) \frac{24^{\overline{49}} + 20}{23} = 1 + 20 = \textcircled{21}$$

$$c) \frac{42^{\overline{28}}}{\textcircled{29}} = 1$$

$$d) \frac{61^{\overline{513}}}{15} = (+1)^{\overline{513}} = \textcircled{+1}$$

$$e) \frac{76^{\overline{17}}}{25} \Rightarrow \textcircled{1}$$

$$\Rightarrow \textcircled{i} \frac{101^{47}}{25} = \textcircled{1}$$

$$\textcircled{ii} \frac{99^{48}}{25} + 21 = 1 + 21 = \underline{\underline{22}}$$

$$\textcircled{iii} \frac{426^{329}}{25} + 11 = 1 + 11 = 12$$

$$\textcircled{iv} \frac{48^{102}}{103} = \underline{1}$$

$$\checkmark \frac{344^{513}}{7} = \textcircled{1}$$

$$\textcircled{vi} \frac{(60)^{989}}{61} + 53 = -1 + 53 = \underline{52}$$

$$\textcircled{vii} \frac{48^{29}}{7} + 13 = \frac{-1 + 13}{7} = \frac{12}{7} \textcircled{5}$$

$$\textcircled{viii} \frac{9^{49}}{10} + 7 = -1 + 7 = \textcircled{6}$$

$$\textcircled{ix} \frac{242^{513}}{3} = (-1)^{513} = -1 + 3 = \textcircled{2}$$



**DELHI POLICE 2025**  
CONSTABLE HCM AWO/TPO DRIVER

**यकीन बैच**

**MATHS**



213(6)

237  
777

~~14331433 × 1422 × 1425~~

1262

1 × 6 = 6

108. If  $14331433 \times 1422 \times 1425$  is divided by 12, then find the remainder obtained.

यदि  $14331433 \times 1422 \times 1425$  को 12 से विभाजित किया जाता है, तो प्राप्त शेषफल ज्ञात करें।

- (a) 9
- (b) 3
- ☒ (c) 6
- (d) 8



**DELHI POLICE 2025**  
**CONSTABLE HCM AWO/TPO DRIVER**

**यकीन बैच**

**MATHS**



109. Find the remainder when  $72 \times 73 \times 78 \times 76$  is divided by 35.

$72 \times 73 \times 78 \times 76$  को 35 से विभाजित करने पर प्राप्त शेषफल ज्ञात करें।

$$\begin{array}{cccc} +2 & +3 & +8 & +6 \\ \hline 72 & \times & 73 & \times & 78 & \times & 76 \end{array}$$

$$\begin{array}{r} 35 \\ 13 \\ \hline 48 \times 6 = 78 \end{array}$$

$$\begin{array}{r} 35 \\ 13 \\ \hline 48 \times 6 = 78 \end{array}$$

(a) 12

(b) 15

(c) 22

~~(d) 8~~



**DELHI POLICE 2025**  
**CONSTABLE HCM AWO/TPO DRIVER**

**यकीन बैच**

**MATHS**



**110. What will be the remainder when  $2^{384}$  is divided by 17?**

$2^{384}$  को 17 से विभाजित करने पर शेषफल क्या होगा?

- (a) 1  
 (b) 2  
 (c) 3  
 (d) 4

$$\Rightarrow \frac{2^{384}}{17}$$

$$\frac{(2^4)^{96}}{17} = \frac{(16)^{96}}{17}$$

$$= \frac{(-1)^{96}}{17} = \frac{1}{17} \Rightarrow 1$$

*Fermat's*

$$\frac{2^{384}}{17} = \frac{(2^{16})^{24}}{17} = 1$$



**DELHI POLICE 2025**  
**CONSTABLE HCM AWO/TPO DRIVER**

**यकीन बैच**

**MATHS**



111. Find the remainder of  $\frac{3^{100}}{7}$ .

$\frac{3^{100}}{7}$  का शेषफल ज्ञात कीजिए।

- (a) 3
- (b) 4
- (c) 5
- (d) 6