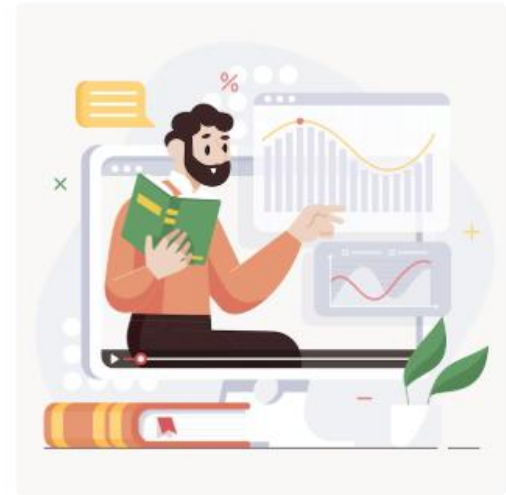


Quantitative Aptitude:

Number Systems

Remainders



Remainders: Problems Part 2



Q1. What is the remainder when 4^{25} is divided by 3?

A. 2

B. 1

C. 0

D. 3

$$\frac{4}{3} \text{ R } \rightarrow 1$$

$$\frac{4^{25}}{3} \text{ R } \rightarrow 1^{25} = \underline{\underline{1}}$$

$$\frac{4^3}{3} = \frac{4 \times 4 \times 4}{3} \text{ R } \rightarrow 1 \times 1 \times 1 = 1$$

Q2. What is the remainder when $17^{123} + 25^{987} \times 333^{555}$ is divided by 4?

☒ A. 2

B. 1

C. 0

D. 3

$$\underline{17 + 25 \times 333}$$

$$\xrightarrow{R} \begin{matrix} 123 & & 4 & & 555 \\ 1 + 1 & \times & 1 \end{matrix}$$

$$= 1 + 1 \times 1$$

$$= 1 + 1 = 2$$

x

o

Q3. What is the remainder when 2^{246} is divided by 3?

A. 2

☒ B. 1

C. 0

D. 3

-ve Rem

$$\frac{2^{246}}{3} \rightarrow (-1)^{246} = \underline{\underline{1}}$$

$$\begin{array}{r} 3 \overline{) 2} (0 \\ \underline{-0} \\ 2 \end{array} \quad \text{or} \quad \begin{array}{r} 3 \overline{) 2} (1 \\ \underline{-3} \\ -1 \end{array}$$

$$\begin{array}{cccccc} 2^1 & 2^2 & 2^3 & 2^4 & 2^5 & \dots \\ -3 \rightarrow & 2 & 1 & 2 & 1 & 2 \end{array}$$

Q4. What is the remainder when 2^{135} is divided by 3?

☒ A. 2

B. 1

C. 0

D. 3

$$\frac{2^{135}}{3} \rightarrow (-1)^{135} = -1$$

$$\text{Rem} = 3 + (-1) = \underline{\underline{2}}$$

Q5. What is the remainder when $7^7 \times 17^{34} + 15^{678}$ is divided by 4?

A. 2

B. 1

☒ C. 0

D. 3

$$\frac{7 \times 17 + 15}{4}$$

$$\rightarrow (-1)^7 \times 1^{34} + (-1)^{678}$$

$$= -1 \times 1 + 1 = -1 + 1 = \underline{\underline{0}}$$

$$\begin{array}{r} 4 \overline{)15} \quad (3 \\ -12 \\ \hline 3 \end{array}$$

$$\text{or } \begin{array}{r} 4 \overline{)15} \quad (4 \\ -16 \\ \hline -1 \end{array}$$

$$\begin{array}{r} 4 \overline{)7} \quad (1 \\ -4 \\ \hline 3 \end{array}$$

$$\text{or } \begin{array}{r} 4 \overline{)7} \quad (2 \\ -8 \\ \hline -1 \end{array}$$

Q6. What is the remainder when $146 \times 147 \times 148 \times 149$ is divided by 150?

☒ A. 24

B. 1

C. 40

D. 110

$$\frac{146 \times 147 \times 148 \times 149}{150}$$

$$\xrightarrow{R} -4 \times (-3) \times (-2) \times (-1)$$

$$= \underline{\underline{24}}$$

+

×

○

Q7. What is the remainder when $145 \times 146 \times 147$ is divided by 148?

A. 6

☒ B. 142

C. 44

D. 110

$$\frac{145 \times 146 \times 147}{148}$$

$$\xrightarrow{R} -3 \times (-2) \times (-1)$$

$$= -6 \Rightarrow \text{Rem} = 148 + (-6)$$

$$= \underline{\underline{142}}$$



Thanks!

