

1. Find the units digit of the number 126^{37} .
A) 1 B) 2 C) 3 D) 4 E) 6
2. Find the units digit of 2^{500} .
A) 0 B) 2 C) 4 D) 6 E) 8
3. Which one of the followings is the units digit of the number 1997^{1997} ?
A) 1 B) 2 C) 3 D) 7 E) 9
4. Find the remainder, when 4^{27} is divided by 5.
A) 0 B) 1 C) 2 D) 3 E) 4
5. What is the remainder, when the number $3^{33} + 4^{18}$ is divided by 5?
A) 4 B) 3 C) 2 D) 1 E) 0
6. Find the remainder, when $3^7 + 5^5 + 7^{37}$ is divided by 6.
A) 0 B) 1 C) 2 D) 3 E) 4
7. If today is Tuesday, what was the day before 340 days?
A) Wednesday B) Saturday
C) Sunday D) Monday
E) Friday
8. $(-123)^{50} \equiv p \pmod{5} \Rightarrow p = ?$
A) 0 B) 1 C) 2 D) 3 E) 4
9. $1999^{2000} \equiv x \pmod{5} \Rightarrow x = ?$
A) 0 B) 1 C) 2 D) 3 E) 4
10. What is the remainder, when 2^{100} is divided by 6?
A) 1 B) 2 C) 3 D) 4 E) 5
11. If $m = 3^{3n} + 5^{6n+1} + 6^{3n+2}$, $n \in \mathbb{Z}^+$, then what is the remainder, when m is divided by 9?
A) 0 B) 1 C) 2 D) 5 E) 8

12. $3^{27} + 4^{27} + 6^{27} + 12^{27} \equiv x \pmod{5} \Rightarrow x = ?$
A) 0 B) 1 C) 2 D) 3 E) 4
13. In $\mathbb{Z}/7$, $\left(\frac{5}{3}\right)^{-97} = ?$
A) 0 B) 1 C) 2 D) 3 E) 4
14. Find the solution set of the equation $3x + 5 = 4$ in $\mathbb{Z}/6$.
A) {2} B) {1,2} C) {0,1} D) {2,5} E) \emptyset
15. Find the sum of the integer values of x , that satisfies $x - 1 \equiv 3 \pmod{5}$ and $0 < x < 25$.
A) 60 B) 62 C) 66 D) 68 E) 70
16. What is the solution set of the system of equations $3x + 2y = 5$
 $2x + 5y = 3$ in $\mathbb{Z}/7$?
A) {(3,4)} B) {(2,3)}
C) {(3,1)} D) {(3,5)} E) {(3,6)}
17. Find the solution set of the equation $2x^2 + 4x = 5$ in $\mathbb{Z}/7$.
A) {2} B) {3} C) {4} D) {5} E) {6}
18. If $x^2 + 7x \equiv 15 \pmod{x}$, then which of the followings is the number of the possible values of x ?
A) 1 B) 2 C) 3 D) 4 E) 5
19. What is the remainder, when $\left[\frac{5^{2k+3}}{3^{2k-1}}\right]$ is divided by 8?
A) 3 B) 4 C) 5 D) 6 E) 7

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