Unit's Digit

1. What is the unit's digit of the number $19^{78} + 35^{39} + 43^{67}$?

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

2. What is the unit's digit of the number $23^{34} \times 34^{57} \times 57^{61}$?

(a) 9 (b) 8 (c) 7 (d) 6

3. Aman wrote product of all natural numbers from 1 to 997 on a board. Naman came and erased all the multiples of 5. Find the unit's digit of the remaining number.

(a) 6 (b) 7 (c) 8 (d) None of these

4. What is the unit's digit of the product of first 40 odd natural numbers?

(a)5 (b) 7 (c) 9 (d) Cannot be determined

5. Let us define function f (x) such that f(x) = Unit digit of x.

Also, A = f (42^{78}), B = f (45^{26}), C = f (18^{39}), then which of the following is true?

(a)A > B > C (b) A > C > B (c) B > C > A (d) B > A > C

6. Find the unit's digit of N, where $N = 16^{16!} + 17^{17!} + 18^{18!}$

(a)2 (b) 3 (c) 4 (d) 5

7. Rahim wrote a number A such that $A = (xyz)^{4k+2}$, where x, y, z and k are positive integers. For how many values of z, will the number A have unit's digit as 1?

(a)0 (b) 1 (c) 2 (d) 3

8. Devraj took a six digit number ending in 4 and raised it to an even power greater than 1000. He then took the number 12 and raised it to a power which leaves the remainder 2 when divided by 8. If he now multiplies both the numbers, what will be the unit's digit of the number he so obtained?

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

9. The last digits in the expansion of the numbers $(584a)^{149}$ and $(584a)^{151}$ are 8 and 2 respectively. What can be said about the value of a?

(a) a = 8 (b) a = 6 (c) a = 4 (d) a = 2

10. What is the unit's digit of the number 1! + 2! + 3! + 4! + 5! + …….. 20!?

(a) 1 (b) 3 (c) 5 (d) 7

12. Find the unit's digit of the number $\left(17^{33}\right)^{67}$

(a)2 (b) 3 (c) 4 (d) 5

13.If the unit's digit of a number $N = (1258a)^{b}$ remains a for all the values of b, then which of the following is true?

(a) The number of values of a can be 2 (b) The number of values of a can be 3

(c) The number of values of a can be 4 (d) The number of values of a can be 5

14. Let us define a_k = Unit's digit of $[(15b)^{k}]$. If $a_1 + a_2 + a_3 + a_4 = 24$, what is the value of b?

(a)4 (b) 6 (c) 8 (d) None of these

Factorial

1. Find the number of zeroes at the end of 58!

(a)10 (b) 11 (c) 12 (d) 13

2. What power of 7 will divide 80! exactly?

(a)11 (b) 12 (c) 13 (d) 14

3. What power of 35 will divide 62! exactly?

(a)9 (b) 10 (c) 11 (d) 12

4. Which of the following cannot be the number of zeroes at the end of any factorial?

(a)26 (c) 27 (c) 28 (d) 29

5. What will be the number of zeroes at the end of $(36!)^{4!}$

(a)96 (b) 168 (c) 192 (d) None of these

6. Find the number of zeroes at the end in the expression $125 \times 64 + 25 \times 8 + 35 \times 12$

(a)0 (b) 1 (c) 2 (d) 3

7. Find the maximum value of n for which the expression $\frac{52!}{105^n}$ is an integer.

(a)8 (b) 12 (c) 23 (d) 32

8. Kashish took a number N such that N! has 31 zeroes at the end. Also, the number N is a prime number. What is the sum of digits of the number N?

(a)9 (b) 10 (c) 11 (d) Data Inadequate

9. If $490! = 7^p \times q$, where q is not a multiple of 7, then find the value of p.

(a)79 (b) 80 (c) 81 (d) 82

10. If $N = (4!)^{4!} \times (6!)^{6!} \times (8!)^{8!} \times (10!)^{10!}$, then find the number of zeroes at the end of N

(a)6! + 8! + 10! (b) 2 × 6! + 8! + 10! (c) 6! + 2 × 8! + 10! (d) 6! + 8! + 2 × 10!

11. If in the previous question, all × are replaced by +, then the number of zeroes at the end of N will be…..

(a)6! + 8! + 2 × 10! (b) 0 (c) 4! (d) None of these

12. A = Product of first 50 multiples of 2.

B = Product of first 8 multiples of 5

Find the number of zeroes at the end of A/B.

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