

1. How many natural numbers are there from 1 to 1000 which have none of their digits repeated.
2. If repetitions are not permitted
 - (i) How many 3 digit numbers can be formed from the six digits 2, 3, 5, 6, 7 & 9 ?
 - (ii) How many of these are less than 400 ?
 - (iii) How many are even ?
 - (iv) How many are odd ?
 - (v) How many are multiples of 5 ?
3. How many two digit numbers are there in which the tens digit and the units digit are different and odd ?
4. Every telephone number consists of 7 digits. How many telephone numbers are there which do not include any other digits but 2, 3, 5 & 7 ?
5. How many odd numbers of five distinct digits can be formed with the digits 0, 1, 2, 3, 4 ?
6. Number of natural numbers between 100 and 1000 such that at least one of their digits is 7, is
 - (A) 225
 - (B) 243
 - (C) 252
 - (D) None of these
7. How many four digit numbers are there which are divisible by 2 ?
8. Number of 4 digit numbers of the form $N = abcd$ which satisfy following three conditions :
 - (i) $4000 \leq N < 6000$
 - (ii) N is multiple of 5
 - (iii) $3 \leq b < c \leq 6$ is equal to
9. The number of 10-digit numbers such that the product of any two consecutive digits in the number is a prime number, is
10. How many of the 900 three digit numbers have at least one even digit ?
 - (A) 775
 - (B) 875
 - (C) 450
 - (D) 750
11. The number of natural numbers from 1000 to 9999 (both inclusive) that do not have all 4 different digits is.
 - (A) 4048
 - (B) 4464
 - (C) 4518
 - (D) 4536

OR

What can you say about the number of even numbers under the same constraints?

12. The number of different seven digit numbers that can be written using only three digits 1, 2 & 3 under the condition that the digit 2 occurs exactly twice in each number is
 - (A) 672
 - (B) 640
 - (C) 512
 - (D) none
13. All possible three digits even numbers which can be formed with the condition that if 5 is one of the digit, then 7 is the next digit is :
 - (A) 5
 - (B) 325
 - (C) 345
 - (D) 365
14. Number of 5 digit numbers which are divisible by 5 and each number containing the digit 5, digits being all different is equal to $k(4!)$, the value of k is
 - (A) 84
 - (B) 168
 - (C) 188
 - (D) 208
15. The number of six digit numbers that can be formed from the digits 1, 2, 3, 4, 5, 6 & 7 so that digits do not repeat and the terminal digits are even is :
 - (A) 144
 - (B) 72
 - (C) 288
 - (D) 720
16. A 5 digit number divisible by 3 is to be formed using the numerals 0, 1, 2, 3, 4 & 5 without repetition. The total number of ways this can be done is :
 - (A) 3125
 - (B) 600
 - (C) 240
 - (D) 216

17. Number of 9 digits numbers divisible by nine using the digits from 0 to 9 if each digit is used atmost once is $K \cdot 8!$, then K has the value equal to _____.
18. Number of natural numbers less than 1000 and divisible by 5 can be formed with the ten digits, each digit not occuring more than once in each number is _____.
19. Number of 3 digit numbers in which the digit at hundredth's place is greater than the other two digit is
(A) 285 (B) 281 (C) 240 (D) 204
20. Number of permutations of 1, 2, 3, 4, 5, 6, 7, 8 and 9 taken all at a time, such that the digit 1 appearing some where to the left of 2 ; 3 appearing to the left of 4 and 5 somewhere to the left of 6, is (e.g. 815723946 would be one such permutation)
(A) $9 \cdot 7!$ (B) $8!$ (C) $5! \cdot 4!$ (D) $8! \cdot 4!$
21. Number of odd integers between 1000 and 8000 which have none of their digits repeated, is
(A) 1014 (B) 810 (C) 690 (D) 1736
22. There are 720 permutations of the digits 1, 2, 3, 4, 5, 6. Suppose these permutations are arranged from smallest to largest numerical values, beginning from 1 2 3 4 5 6 and ending with 6 5 4 3 2 1.
(a) What number falls on the 124th position?
(b) What is the position of the number 321546?
23. How many numbers between 400 and 1000 (both exclusive) can be made with the digits 2,3,4,5,6,0 if
(a) repetition of digits not allowed.
(b) repetition of digits is allowed.
24. The number of three digit numbers having only two consecutive digits identical is -
(A) 153 (B) 162 (C) 180 (D) 161
25. Find the number of 10 digit numbers using the digits 0, 1, 2, 9 without repetition. How many of these are divisible by 4.
26. Number of four digit numbers with all digits different and containing the digit 7 is -
(A) 2016 (B) 1828 (C) 1848 (D) 1884
27. All the five digits number in which each successive digit exceeds its predecessor are arranged in the increasing order of their magnitude. The 97th number in the list does not contain the digit
(A) 4 (B) 5 (C) 7 (D) 8
28. Six persons A, B, C, D, E and F are to be seated at a circular table. The number of ways this can be done if A must have either B or C on his right and B must have either C or D on his right is :
(A) 36 (B) 12 (C) 24 (D) 18
29. A round table conference is to be held between 20 delegates of 2 countires. In how many ways can they be seated if two particular delegates are
(a) always to sit together
(b) or never to sit together?
30. There are 20 persons including two brothers. In how many ways can they be arranged on a round table if:
(a) There is exactly one person between the two brothers
(b) The two brothers are always separated.

Answers

1. 738 2. (i) 120 (ii) 40 (iii) 40 (iv) 80 (v) 20 3. 20 4. 4^7 5. 36 6. (C) 7. 4500
8. 24 9. 2048 10. (A) 11. (B) or 2204 12. (A) 13. (D) 14. (B) 15. (D)
16. (D) 17. $K = 17$ 18. 154 19. (A) 20. (A) 21. (D) 22. (a) 213564 (b) 267^{th}
23. (a) 60 (b) 107 24. (B) 25. $(20)!.8!$ 26. (C) 27. (B) 28. (D)
29. (a) $2(18)!$ (b) $19! - 2(18)!$ 30. (a) $2(18)!$ (b) $17.18!$