Q1. 21 January Shift 1

The number of strictly increasing functions f from the set $\{1,2,3,4,5,6\}$ to the set $\{1,2,3,\ldots,9\}$ such that $f(i) \neq i$ for $1 \leq i \leq 6$, is equal to :

(1) 27 (2) 22 (3) 21 (4) 28

Q2. 21 January Shift 1

Let $S = \{(m,n) : m,n \in \{1,2,3,\ldots,50\}\}$. If the number of elements (m,n) in S such that $6^m + 9^n$ is a multiple of 5 is p and the number of elements (m,n) in S such that $m+n$ is a square of a prime number is q, then $p+q$ is equal to ____.

Q3. 21 January Shift 2

The largest $n \in \mathbf{N}$, for which 7^n divides 101!, is :

(1) 16 (2) 15 (3) 18 (4) 19

Q4. 22 January Shift 1

Let ABC be a triangle. Consider four points p_1, p_2, p_3, p_4 on the side AB, five points p_5, p_6, p_7, p_8, p_9 on the side BC, and four points $p_{10}, p_{11}, p_{12}, p_{13}$ on the side AC. None of these points is a vertex of the triangle ABC. Then the total number of pentagons, that can be formed by taking all the vertices from the points $p_1, p_2, \ldots, p_{13}$, is ____

Q5. 23 January Shift 1

The number of 4 -letter words, with or without meaning, which can be formed using the letters PQRPQRSTUVP, is ____.

Q6. 23 January Shift 2

The number of ways, in which 16 oranges can be distributed to four children such that each child gets at least one orange, is

(1) 455 (2) 429 (3) 403 (4) 384

Q7. 23 January Shift 2

Let S denote the set of 4-digit numbers $abcd$ such that $a > b > c > d$ and P denote the set of 5 -digit numbers having product of its digits equal to 20. Then $n(S) + n(P)$ is equal to ____

Q8. 24 January Shift 1

The number of numbers greater than 5000, less than 9000 and divisible by 3, that can be formed using the digits $0, 1, 2, 5, 9$, if the repetition of the digits is allowed, is ____

Q9. 24 January Shift 2

The largest value of n, for which 40^n divides 60!, is

(1) 11 (2) 12 (3) 14 (4) 13

Q10. 24 January Shift 2

The letters of the word "UDAYPUR" are written in all possible ways with or without meaning and these words are arranged as in a dictionary. The rank of the word "UDAYPUR" is

(1) 1579 (2) 1581 (3) 1578 (4) 1580

Q11. 28 January Shift 1

Let $S = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$. Let x be the number of 9 -digit numbers formed using the digits of the set S such that only one digit is repeated and it is repeated exactly twice. Let y be the number of 9-digit numbers formed using the digits of the set S such that only two digits are repeated and each of these is repeated exactly twice. Then,

(1) $56x = 9y$ (2) $29x = 5y$ (3) $45x = 7y$ (4) $21x = 4y$

Q12. 28 January Shift 2

Three persons enter in a lift at the ground floor. The lift will go upto 10^{th} floor. The number of ways, in which the three persons can exit the lift at three different floors, if the lift does not stop at first, second and third floors, is equal to ____.

ANSWER KEYS

1. (4)	**2.** 1333	**3.** (1)	**4.** 660	**5.** 1422	**6.** (1)	**7.** 260	**8.** 42
9. (3)	**10.** (4)	**11.** (4)	**12.** 210				