DPP
DAILY PRACTICE PROBLEMS

CLASS : XIth **SUBJECT : MATHS**
DATE : **DPP NO. :2**

Topic :-PERMUTATIONS AND COMBINATIONS

1. If ${}^{n}C_{r}$ denotes the number of combinations of n things takes r at a time, then the expression ${}^{n}C_{r+1} + {}^{n}C_{r-1} + 2 \times {}^{n}C_{r}$, equals
   a) ${}^{n+2}C_{r}$ b) ${}^{n+2}C_{r+1}$ c) ${}^{n+1}C_{r}$ d) ${}^{n+1}C_{r+1}$

2. If $\frac{2}{9!} + \frac{2}{3!7!} + \frac{1}{5!5!} = \frac{2^{a}}{b!}$, where $a, b, \in N$, then the ordered pair (a, b) is
   a) $(9, 10)$ b) $(10, 9)$ c) $(7, 10)$ d) $(10, 7)$

3. The number of diagonals that can be drawn by joining the vertices of an octagon is
   a) 28 b) 48 c) 20 d) None of these

4. A father with 8 children takes 3 at a time to the zoological garden, as often as he can without taking the same 3 children together more than once. The number of times he will go to the garden, is
   a) 112 b) 56 c) 336 d) None of these

5. If ${}^{189}C_{35} + {}^{189}C_{x} = {}^{190}C_{x}$, then x is equal to
   a) 34 b) 35 c) 36 d) 37

6. The number of ways in which n ties can be selected from a rack displaying 3 n different ties is
   a) $\frac{3n!}{2n!}$ b) $3 \times n!$ c) $(3n)!$ d) $\frac{3n!}{n!2n!}$

7. The number of permutations of 4 letters that can be made out of the letters of the word EXAMINATION is
   a) 2454 b) 2452 c) 2450 d) 1806

8. The number of ways in which 5 boys and 5 girls can be seated for a photograph so that no two girls sit next to each other is
   a) 6!.5! b) $(5!)^{2}$ c) $\frac{10!}{(5!)}$ d) $\frac{10!}{(5!)^{2}}$

9. The number of diagonals of a polygon of 20 sides is
   a) 210 b) 190 c) 180 d) 170

10. The value of ${}^{47}C_{4} + \sum_{r=1}^{5} {}^{52-r}C_{3}$ is equal to
    a) ${}^{47}C_{6}$ b) ${}^{52}C_{5}$ c) ${}^{53}C_{4}$ d) None of these

11. In how many ways can 21 English and 19 Hindi books be placed in a row so that no two Hindi books are together?
    a) 1540 b) 1450 c) 1504 d) 1405

12. In a group of boys, two boys are brothers and in this group, 6 more boys are there. In how many ways, they can sit if the brothers are not to sit alongwith each other :

a) 4820 b) 1410 c) 2830 d) None of these

13. All possible four-digit numbers are formed using the digits 0,1,2,3 so that no number has repeated digits. The number of even number among them is
a) 9 b) 18 c) 10 d) None of these

14. In how many ways can 4 prizes be distributed among 3 students, if each students can get all the 4 prizes?
a) 4! b) 3^4 c) $3^4 - 1$ d) 3^3

15. In a chess tournament where the participants were to play one game with one another, two players fell ill having played 6 games each, without playing among themselves. If the total number of games is 117, then the number of participants at the beginning was
a) 15 b) 16 c) 17 d) 18

16. How many even numbers of 3 different digits can be formed from the digits 1, 2, 3, 4, 5, 6, 7, 8, 9 (repetition of digits is not allowed)?
a) 224 b) 280 c) 324 d) None of these

17. If a denotes the number of permutations of $x + 2$ things taken all at a time, b the number of permutations of x things taken 11 at a time and c the number of permutations of $x - 11$ things taken all at a time such that $a = 182\ bc$, then the value of x is
a) 15 b) 12 c) 10 d) 18

18. Eleven books consisting of 5 Mathematics, 4 physics and 2 Chemistry are places on a shelf. The number of possible ways of arranging them on the assumption that the books of the same subject are all together, is
a) 4! 2!b) 11!c) 5! 4! 3! 2!d) None of these

19. The number of mappings (functions) from the set $A = \{1, 2, 3\}$ into the set $B = \{1, 2, 3, 4, 5, 6, 7\}$ such that $f(i) \leq f(j)$whenever $i < j$, is
a) 84 b) 90 c) 88 d) None of these

20. The number of ordered triplets of positives integers which are solutions of the equations of the equation $z + y + z = 100$, is
a) 6005 b) 4851 c) 5081 d) None of these