CLASS –XI   SUBJECT – MATHEMATICS
ASSIGNMENT- 2   TOPIC–PERMUTATIONS   AND
                                                            COMBINATIONS

Q1. How many 3-digit number can be formed without using digits 1, 2, 3, 9, 5 if repetition of digits is not allowed ? (Ans. 48)

Q2. Find n if $^9P_5 + 5.^9P_4 = {}^{10}P_n$

Q3. How many numbers can be formed from the digits 2, 4, 6, 9 if repetition of digits is not allowed? (An. 64)

Q4. Evaluate n, if $P(15, n – 1) : P (16, n – 2) = 3:4$ (Ans 14)

Q5. Prove that $\dfrac{2n!}{n!} = [1.3.5 \ldots\ldots\ldots (2n-1)] 2^n$

Q6. 8 Children are to be seated on a bench
(i) In how many ways can the children be seated? (8! = 40320)
(ii) How many arrangements are possible if the youngest child sits at the left hand end of the bench? (50:40)

Q7. From 30 teachers in school, 1 Principal & 1 Vice Principal are to be appointed. In how many ways can this be done?

Q8. Find total number of ways of answering 5 objectives type questions each questions having 4 choices. (Ans 4^5)

Q9. How many numbers are there between 100 and 1000 such that 5 is in the unit place? (Ans 90)

Q10. A gentleman has 6 friends to invite. In how many ways can he send invitation cards to them if he has 3 servants to carry the cards? (Ans. 729)

Q11. 3 married couples are to be seated in a row having 6 seats in a cinema hall. If spouses are to be seated next to each other, in how many ways can they be seated? Find also number of ways of their seating if all the ladies together.

Q12. How many different words can be formed with the letters of the word HARYANA ? How many of these
    (i) Have H & N together?   (Ans. 120)   (ii) Begin with H and end with N? (Ans. 20)
    (iii) Have three vowels together? (Ans. 120)

Q13. How many numbers are there between 100 and 1000 such that every digit is either 2 or 9 ? (Ans 8)

Q14. Prove that $^nc_r + {}^nc_{r-1} = {}^{n+1}c_r$

Q15. If $^8C_r - {}^7C_3 = {}^7C_2$, find the value of r (3 or 5)

Q16. A committee of 5 is to be selected from among 6 boys and 5 girls. Determine the no. of ways of selecting the committee if it is to consist of at least one boy and one girl (Ans. 455)

Q17. How many different words, each containing 2 vowels and 3 consonants can be formed with 5 vowels and 17 consonants. (Ans. 816000)

Q18. In a meeting after everyone had shaken hands with everyone else, it was found that 66 handshakes were exchanged. How many members were present at the meeting. (Ans. 12)

Q19. If a polygon has 44 diagonals, then what is the number of its sides (Ans. 11)

Q20. If $^{16}C_r = {}^{16}C_{r+2}$, find rc_4. (Ans. 35)

Q21. If $^nP_r = {}^nP_{r+1}$ and $^nc_r = {}^nc_{r-1}$, find the values of n and r. (Ans n = 3, r = 2)

Q22. If $^{n+2}C_8 : {}^{n-2}C_4 = 57:16$, find n (n = 19).

Q23. If $\alpha = {}^mc_2$ then fixed $^\alpha C_2$

Q24. Find the number of ways in which 5 boys and 5 girls be seated in a row such that:-
   (i)   No two girls may sit together (5! X 6!)
   (ii) All the girls sit together and all the boys sit together (2 x 5! 5!)
   (iii) All the girls are never together (10! – 5! X 6!)