



# THE RADIANT INTERNATIONAL SCHOOL

UGAT CANAL, JAHANGIRABAD, SURAT. PH – 7048461000 / 7048462000

XI SCIENCE

HOMEWORK

PERMUTATIONS

1. Evaluate:

(i)  ${}^{10}P_4$

(ii)  ${}^{62}P_3$

(iii)  ${}^6P_6$

(iv)  ${}^9P_0$

2. Prove that  ${}^9P_3 + 3 \times {}^9P_2 = {}^{10}P_3$ .

3. (i) If  ${}^nP_5 = 20 \times {}^nP_3$ , find  $n$ .

(ii) If  $16 \times {}^nP_3 = 13 \times {}^{n+1}P_3$ , find  $n$ .

(iii) If  ${}^{2n}P_3 = 100 \times {}^nP_2$ , find  $n$ .

4. (i) If  ${}^5P_r = 2 \times {}^6P_{r-1}$ , find  $r$ .

(ii) If  ${}^{20}P_r = 13 \times {}^{20}P_{r-1}$ , find  $r$ .

(iii) If  ${}^{11}P_r = {}^{12}P_{r-1}$ , find  $r$ .

5. (i) If  ${}^nP_4 : {}^nP_5 = 1 : 2$ , find  $n$ .

(ii) If  ${}^{n-1}P_3 : {}^{n+1}P_3 = 5 : 12$ , find  $n$ .

6. If  ${}^{15}P_{r-1} : {}^{16}P_{r-2} = 3 : 4$ , find  $r$ .

7. If  ${}^{2n-1}P_n : {}^{2n+1}P_{n-1} = 22 : 7$ , find  $n$ .

8. Find  $n$ , if  ${}^{n+5}P_{n+1} = \frac{11}{2}(n-1) \cdot {}^{n+3}P_n$ .

9. Prove that  $1 + 1 \cdot {}^1P_1 + 2 \cdot {}^2P_2 + 3 \cdot {}^3P_3 + \dots + n \cdot {}^nP_n = {}^{n+1}P_{n+1}$ .

10. Find the number of permutations of 10 objects, taken 4 at a time.

ANSWERS:

1. (i) 5040 (ii) 226920 (iii) 720 (iv) 1 3. (i)  $n = 8$  (ii)  $n = 15$  (iii)  $n = 13$

4. (i)  $r = 3$  (ii)  $r = 8$  (iii)  $r = 9$  5. (i)  $n = 6$  (ii)  $n = 8$

6.  $r = 14$  7.  $n = 10$  8.  $n = 6$  or  $n = 7$  10. 5040