IEM KOLKATA

PERMUTATIONS AND COMBINATIONS

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Q1) If ${}^{56}P_{r+6} : {}^{54}P_{r+3} = 30800$, then find ${}^{r}P_2$.
(a) 1840 (b) 2640 (c) 1640 (d) 820

Q2) There is a 7-digit telephone number with all different digits. If the digit at extreme right right and extreme left are 5 and 6 respectively, then how many such telephone numbers are possible?
(a) 120 (b) 100000 (c) 6720 (d) 30240

Q3) There are 5 tasks and 5 persons. Task 1 cannot be assigned to either person 1 or person 2. Task 2 must be assigned to either person 3 or person 4. Every person is to be assigned one task. In how many ways can this assignment be done?
(a) 6 (b) 12 (c) 24 (d) 144

Q4) In how many ways, can 15 people be seated around two round tables with seating capacities of 7 and 8 people?
(a) $\frac{15!}{8!}$ (b) $\frac{7!}{88!}$ (c) ${}^{15}C_8 \times 6! \times 7!$ (d) ${}^{15}C_8 \times 8!$

Q5) In how many different ways, 5 boys and 5 girls can sit on a circular table, so that the boys and girls are alternate?
(a) 2880 (b) 2800 (c) 2680 (d) 2280

Q6) Suppose in a box, there are 20 red, 30 black, 40 blue and 50 white balls. What is the minimum number of balls to be drawn, without replacement, so that you are certain about getting 4 red, 5 black, 6 blue and 7 white balls?