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Q.47)	If $n_{p_r} = n_{p_{r+1}}$ and $n_{C_r} = n_{C_{r+1}}$, find the value of n & r ?	
Sol.47)	We have, $n_{p_r} = n_{p_{r+1}}$ ⇨ $\frac{n!}{(n-r)!} = \frac{n!}{(n-r)!}$ ⇨ $\frac{1}{(n-r)(n-r-1)!} = \frac{1}{(n-r-1)!}$ ⇨ $n-r=1$.....(1) We have, $n_{C_r} = n_{C_{r-1}}$ ⇨ $\frac{n!}{r!(n-r)!} = \frac{n!}{(r+1)!(n-r-1)!}$ ⇨ $\frac{1}{r!(n-r)(n-r-1)!} = \frac{1}{(r+1)r!(n-r-1)!}$ ⇨ $\frac{1}{n-r} = \frac{1}{r+1}$ ⇨ n – r = r+ 1 .....(2) from (1) & (2), r+1 = 1 ⇨ r = 0 & n = 1 ans.	
Q.48)	In an examination, a question paper consists of 12 qns. Divided in to 2 parts, part 1 & part 2 containing 5 & 7 questions respectively. A student is required to attempt 8 questions in all selecting at least 3 questions from each part. In how many ways can be a student select questions?	
Sol.48)		420
Q.49)	Determine the number of 5 card combination out of a dick of 52 cards. If there is exactly one all in each combination?	
Sol.49)		$4c_1 \text{x } 48c_4$
Q.50)	How many different words can be formed with the letters of word MISSISSPPI? In how many of these words in which 4 I's do not came together?	
Sol.50)	HINT : 4 I's not together = total words – 4 I's together words = $\frac{11!}{4!4!2!} - \frac{8!}{4!2!}$ = 33810 ans.	
Q.51)	If $n_{C_8} = n_{C_6}$, find n_{C_2} ?	
Sol.51)	We have, $n_{C_8} = n_{C_6}$ ⇨ n = 8+ 6 .....$\{prop.if\ n_{C_x} = n_{C_y}\ \text{then x + y = n}\}$ ⇨ n = 14 now, $n_{C_2} = 14_{C_2} = \frac{14 \text{ x } 13}{2} = 91\ ans.$	
Q.52)	We wish to select 6 persons from 8, but if the person A is chosen, then B must be chosen. In how many ways can the selection be made?	
Sol.52)	HINT: two cases : Case 1): 6_{C_4} & Case 2): 7_{C_6}	22
Q.53)	How many words can be formed by taking 4 letters at a time from the letter of the word MURADABAD?	
Sol.53)		Same as Q.19.. 626
Q.54)	There are13 players out of which 4 are bowlers, in how many ways a team of 11 be selected such that 1. there is no restriction on selectors 2. 1 particular player never chosen	

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	3. 1 particular player always be chosen 4. Must include at least 3 bowlers	
Sol.54)	(1) $13_{C_{11}}$, (2) $12_{C_{11}}$, (3) $12_{C_{10}}$, (4) $9_{C_8} \times 4_{C_3} + 9_{C_7} \times 4_{C_4}$	
Q.55)	A committee of 7 has to be formed from 9 boys & 4 girls. In how many ways can this be done, when committee consists of: 1. Exactly 3 girls 2. At least 3 girls 3. At most 3 girls 4. None of them is a girl 5. Boys are in majority 6. At least 3 from each gender 7. 1 particular boy and 1 particular girl never chosen	
Sol.55)	1. $9_{C_4} \times 4_{C_3}$ 2. $9_{C_4} \times 4_{C_3} + 9_{C_3} \times 4_{C_4}$ 3. $(9_{C_4} \times 4_{C_3}) + (9_{C_5} \times 4_{C_2}) + (9_{C_6} \times 4_{C_1}) + (9_{C_7} \times 4_{C_0})$ 4. 9_{C_7} 5. $(9_{C_4} \times 4_{C_3}) + (9_{C_5} \times 4_{C_2}) + (9_{C_6} \times 4_{C_1}) + (9_{C_7} \times 4_{C_0})$ 6. $(9_{C_4} \times 4_{C_3}) + (9_{C_3} \times 4_{C_4})$ 7. 11_{C_7}	
Q.56)	Find the no. of ways in which 5 boys and 5 girls be seated in a row so that: 1. No 2 girls may sit together 2. All the girls never together	
Sol.56)	(1) 5!x6! , (2) 10! – 5! X 6! ans.	
Q.57)	A code word is to consist of 2 distinct English alphabets followed by 2 distinct numbers from 1 to 9. For example, (A23 is a code word. (i) how many such code words are there and (ii) how many of them & with an even integer?	
Sol.57)	(i) $26_{p_2} \times 9_{p_2}$ = 46800 ans. (ii) $9_{C_8} \times 8 \times 4$ = 20800 ans.	
Q.58)	A box contains 2 white balls, 3 black balls & 4 red balls. The number of ways of drawing 3 balls from the box if at least 1 black ball is to be included in the draw?	
Sol.58)	64 (3) (6) Black | Non- black 1 | 2 2 | 1 3 | 0	
Q.59)	A committee of 6 is to be chosen from 10 men & 7 women so as to contain at least 3 men & at least 2 women. In how many different ways can this be done if two particular women refuse to serve on the same committee?	
Sol.59)	Men = 10 , women = 7 Required = 6 (i) Total no. of committees containing at least 3 women & 2 men are given by = $(10c_3 \times 7c_3)$ + $(10c_4 \times 7c_2)$ = 4200 + 4410 = 8610 (ii) No. of committees in which 2 particular women sure on the same committee = $(10c_4 \times 2c_2)$ + $(10c_3 \times 2c_2 \times 5c_1)$ = 210+600 = 810	

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	(iii) Required no. of committees in which 2 particular women d not came together = Total – together = 8610 – 810 = 7800 ans.	

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