	BCM SCHOOL BASNNT AVENUE DUGRI LUDHIANA ASSIGNMENT XI SC	
1	The total number of words formed by 2 vowels and 3 consonants taken from 4 vowels and 5 consonants is (a) 60 (b) 120 (c) 7200 (d) 720	C
2	Everybody in a room shakes hands with everybody else. If the total number of handshakes is 66, then the total number of persons in the room is (a) 11 (b) 12 (c) 13 (d) 14	B
3	The number of triangles that are formed by choosing the vertices from a set of 12 points, seven of which lie on the same line is (a) 105 (b) 15 (c) 175 (d) 185	D
4	The number of parallelograms that can be formed form a set of four parallel lines intersecting another set of three parallel lines is (a) 6 (b) 18 (c) 12 (d) 9	B
5	The number of words which can be formed out of the letters of the word ARTICLE, so that vowels occupy the even place is (a) 1440 (b) 144 (c) 7! (d) ${}^4C_4 \times {}^3C_3$	B
6	Eight chairs are numbered 1 to 8. Two women and 3 men wish to occupy one chair each. First the women choose the chairs from amongst the chairs 1 to 4 and then men select from the remaining chairs. Find the total number of possible arrangements. Sol. First the women choose the chairs from amongst the chairs numbered 1 to 4. Two women can be arranged in 4 chairs in ${}^4P_2$ ways. In remaining 6 chairs, 3 men can be arranged in ${}^6P_3$ ways. $\therefore$ Total number of possible arrangements $= {}^4P_2 \times {}^6P_3 = \frac{4!}{2!} \times \frac{6!}{3!}$ $= 4 \times 3 \times 6 \times 5 \times 4 = 1440$	
7	If the letters of the word RACHIT are arranged in all possible ways as listed in dictionary, then what is the rank of the word RACHIT? Sol: The alphabetical order of the letters of the word RACHIT is: A, C, H, I, R, T. Number of words beginning with A = 5! Number of words beginning with C = 5! Number of words beginning with H = 5! Number of words beginning with 1 = 5! Clearly, the first word beginning with R is RACHIT. .•. Rank of the word RACHIT in dictionary = 4×5! + 1= 4 x120+1= 481	
8	Out of 18 points in a plane, no three are in the same line except five points which are collinear. Find the number of lines that can be formed joining the point.	

	Sol: There are 18 point in a plane, of which 5 points are collinear. **Number of straight lines formed by joining the 18 points taking 2 at a time = $^{18}C_2$** **Now, number of straight lines formed by joining 5 points which are collinear taking 2 at a time = $^{5}C_2$** **But 5 collinear points, when joined pairwise, give only one line.** **$\therefore$ Required number of straight lines = $^{18}C_2 - {}^{5}C_2 + 1 = 153 - 10 + 1 = 144$**	
9	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 selections be made? Sol: Total number of persons = 8 Number of person to be selected = 6 It is given that, if A is chosen then, B must be chosen. Therefore, following cases arise: Number of persons to be chosen out of 8=6 CASE I:When A is chosen, B must be chosen Number of ways of selecting 4 more persons from remaining 6 persons= $^{8-2}$ CASE II:When A is not chosen Number of ways of selecting 6 persons from remaining 7 persons= $7C_6 = 7$ Total ways=$15 + 7 = 22$	
10	How many automobile license plates can be made, if each plate contains two different letters followed by three different digits? Sol: There are 26 English alphabets and 10 digits (0 to 9). It is given that each plate contains two different letters followed by three different digits. Each plate contains 2 different letters followed by 3 different digits Arrangement of 26 letters taken 2 at a time=$^{26}P_2 = 26 * 25 = 650$ Arrangementof 10 digits taken 3 at a time= $^{10}P_3 = 10 * 9 * 8 = 720$ Total number of license plates=$650 * 720 = 468000$	
11	Find the number of different words that can be formed from the letters of the word TRIANGLE, so that no vowels are together. Sol: Given word is: TRIANGLE Consonants are: T, R, N, G, L Vowels are: I, A, E Since we have to form words in such a way that no two vowels are together, we first arrange consonants.	

	Five consonants can be arranged in 5! ways. $\times C \times C \times C \times C \times C \times$ Arrangements of consonants (in the fig. marked as C) creates six gaps marked as '×' Now three vowels can be arranged in any three of these 6 gaps in ${}^6P_3$ ways. So, total number of arrangements = $5! \times {}^6P_3 = 120 \times 120 = 14400$	
12	If ${}^nC_{r-1}$= 36 ${}^nC_r$ = 84 and ${}^nC_{r+1}$= 126, then find the value of ${}^rC_2$.	
13	Find the number of permutations of n distinct things taken r together, in which 3 particular things must occur together.	
14	Find the number of different words that can be formed from the letters of the word TRIANGLE, so that no vowels are together.	
15	There are 10 lamps in a hall each one of them can be switched on independently. Find the number of ways in which the hall can be illuminated. Sol: There are 10 lamps in a hall. The hall can be illuminated if at least one lamp is switched. .•. Total number of ways = ${}^{10}C_1 + {}^{10}C_2 + {}^{l0}C_3 \ldots + {}^{10}C_{l0}$ $= 2^{10} - 1 = 1024 - 1 = 1023$	