INDIAN SCHOOL MUSCAT
SENIOR SECTION
DEPARTMENT OF MATHEMATICS
CLASS XI

PERMUTATION AND COMBINATIONS

Q	Q (1,2) State if each scenario mainly involves a permutation or combination.	Ans
1.	A team of 8 basketball players needs to select a captain and co-captain.	P
2.	There are 45 applicants for selecting three Computer Programmer positions.	C
3.	There are 110 people at a meeting. They each shake hands with everyone else. How many handshakes were there?	5995
4.	20 points lying on circle forms a polygon. Find how many diagonals does the polygon has ?	170
5.	Find the number of integral points (both the coordinates should be integers) that lie exactly in the interior of the triangle with the vertices (0,0), (0,21) and (21,0).	190
6.	Seven bands have volunteered to perform at a benefit concert, but there is only enough time for four of the bands to play. How many line ups are possible?	840
7.	8 Children are to be seated on a bench (i) In how many ways can the children be seated? (ii) How many arrangements are possible if the youngest child sits at the left hand end of the bench?	 40320 50:40
8.	3 married couples are to be seated in a row having 6 seats in a cinema hall. i) If spouses are to be seated next to each other, in how many ways can they be seated? ii) After the interval the ladies decided to sit next to each other, in how many way they now be seated.	 48 144
9.	How many three digit numbers can be formed using the digits 3, 5, 2, 0, 1 when repetition of digits is a) allowed. b) not allowed.	 100 48
10.	Find the number of parallelograms that can be formed from set of four parallel lines intersecting another set of three parallel lines.	18
11.	The letters of the word SURITI are written in all possible orders and these words are written out as in dictionary. Find the rank of the word SURITI in that order.	236
12.	If $C(n-1,r) = (k^2-3)\ C(n,r+1)$, then show that $3 < k^2 \leq 4$, where C(n, r) means the number of ways in which r objects can be selected out of n objects.	
13.	A team of 8 students goes on excursion in two cars, of which has 5 seats and other has 4 seats for the students. In how many ways can they travel?	126
14.	9 people are to be seated in a row. Two of them must sit next to each other and another two of the remaining six does not want to sit next to each other. How many different seating arrangements are possible.	$12(7!)$