Perms and Coms 1

1) A 4-digit number is formed by using four of the seven digits 1, 3, 4, 5, 7, 8 and 9. No digit can be used more than once in any one number. Find how many different 4-digit numbers can be formed if

(i) there are no restrictions, [2]

(ii) the number is less than 4000, [2]

(iii) the number is even and less than 4000. [2]

2) A committee of 8 people is to be selected from 7 teachers and 6 students. Find the number of different ways in which the committee can be selected if

(i) there are no restrictions, [2]

(ii) there are to be more teachers than students on the committee. [4]

3)

(a) A sports team of 3 attackers, 2 centres and 4 defenders is to be chosen from a squad of 5 attackers, 3 centres and 6 defenders. Calculate the number of different ways in which this can be done. [3]

(b) How many different 4-digit numbers greater than 3000 can be formed using the six digits 1, 2, 3, 4, 5 and 6 if no digit can be used more than once? [3]

4)

(a) How many different four-digit numbers can be formed from the digits 1, 2, 3, 4, 5, 6, 7, 8, 9 if no digit may be repeated? [2]

(b) In a group of 13 entertainers, 8 are singers and 5 are comedians. A concert is to be given by 5 of these entertainers. In the concert there must be at least 1 comedian and there must be more singers than comedians. Find the number of different ways that the 5 entertainers can be selected. [6]

5) **(a)** Find the number of different arrangements of the 9 letters of the word SINGAPORE in which S does **not** occur as the first letter. [2]

(b) 3 students are selected to form a chess team from a group of 5 girls and 3 boys. Find the number of possible teams that can be selected in which there are more girls than boys. [4]

6) **(i)** Find the number of different arrangements of the letters of the word MEXICO.

Find the number of these arrangements

(ii) which begin with M,

(iii) which have the letter X at one end and the letter C at the other end.

[5]

Four of the letters of the word MEXICO are selected at random. Find the number of different combinations if

(iv) there is no restriction on the letters selected,

(v) the letter M must be selected.

[3]