COUNTING & PROBABILITY (Q 6, PAPER 2)

2003

6 (a) I write down today's date as 09062003 and then select one of the digits at random.
   (i) What is the probability that I select the 9?

   (ii) What is the probability that I select an odd digit?

(b) Two women, Ann and Bríd, and two men, Con and Declan, sit in a row for a photograph.
   (i) How many different arrangements of the four people are possible?

   (ii) Write out the four possible arrangements that have the two women in the middle.

   (iii) If the arrangement of the four people is chosen at random from all of the possible arrangements, what is the probability that the two women will be in the middle?

(c) In a certain school the examination subjects for senior students are grouped as follows:

Compulsory Subjects	Block A	Block B	Block C
Irish English mathematics	French German	biology home economics construction studies accounting	business organisation history physics

As well as taking all three of the compulsory subjects, each student must choose *one* subject from Block A, *two* from Block B and *one* from Block C.
   (i) In choosing two subjects from Block B, how many different selections are possible?

   (ii) In choosing the full range of subjects, how many different selections are possible?

   (iii) One student has already decided to do German and construction studies. How many different selections of the remaining subjects are possible for this student?

   (iv) If the student referred to in part **(iii)** selects her remaining subjects at random, what is the probability that she will select both biology and physics?

ANSWERS

6   (a)   (i) $\frac{1}{8}$ (ii) $\frac{1}{4}$

     (b)   (i) 24

         (ii) (Con, Ann, Brid, Declan), (Declan, Ann, Brid, Con),
            (Con, Brid, Ann, Declan), (Declan, Brid, Ann, Con)

         (iii) $\frac{1}{6}$

     (c)   (i) 6   (ii) 36   (iii) 9   (iv) $\frac{1}{9}$