

COUNTING & PROBABILITY (Q 6, PAPER 2)

LESSON NO. 1: COMBINATIONS

2006

6 (a) Evaluate $5\binom{8}{3} - 4\binom{8}{4}$.

2005

6 (a) (ii) Evaluate $\binom{12}{3}$.

2004

- 6 (b) A committee of 3 people is selected from a group of 15 doctors and 12 dentists. In how many different ways can the 3 people be selected
- (i) if there are no restrictions
 - (ii) if the selection must contain exactly 2 doctors
 - (iii) if the selection must contain at least 1 doctor and at least 1 dentist
 - (iv) if the selection must contain one specific doctor and one specific dentist?

2002

- 6 (a) There are eight questions on an examination paper.
- (i) In how many different ways can a candidate select six questions?
 - (ii) In how many different ways can a candidate select six questions if one particular question must always be selected?

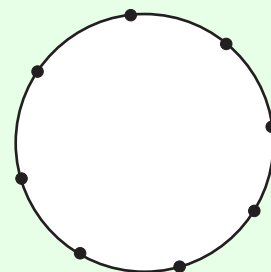
2001

- 6 (c) (i) Eight points lie on a circle, as in the diagram. How many different lines can be drawn by joining any two of the eight points?

- (ii) Find the value of the natural number n such that

$$\binom{n}{2} = 105.$$

[Note: $\binom{n}{2}$ may also be written as nC_2 .]



1999

- 6 (a) (i) In how many ways can a team of 5 players be chosen from a panel of 8 players?
- (ii) If a certain player must be on the team, in how many ways can the team be then chosen.

1998

- 6 (b) A committee of 4 people is to be formed from a group of 7 men and 6 women.
- (i) How many different committees can be formed?
- (ii) On how many of these committees is there an equal number of men and of women?

1997

- 6 (a) A class of 29 students wins a prize. Two members of the class are chosen to receive the prize. How many different pairs of students can be chosen?

ANSWERS

2006 6 (a) 0

2005 6 (a) (ii) 220

2004 6 (b) (i) 2,925 (ii) 1,260 (iii) 2,250 (iv) 25

2002 6 (a) (i) 28 (ii) 21

2001 6 (c) (i) 28 (ii) 15

1999 6 (a) (i) 56 (ii) 35

1998 6 (b) (i) 715 (ii) 315

1997 6 (a) 406