NAME: ………………………………………………. CLASS: ……….

**S6 APPLIED MATHEMATICS P425/2 TEST**

**TIME: 1 HOUR**

Answer **all** the questions.

1. A box A contains 2 red, 3 green and 2 blue balls. Box B contains 3 red, 2 green and 4 blue balls. A balanced die is thrown and if the throw is a six, box A is chosen, otherwise box B is chosen. A ball is drawn at random from the chosen box. Given that a green ball is drawn, what is the probability that it came from box A?

2. Forces of 2 N, 3 N, 5N, P N, 4 N and Q N act along the sides of a regular hexagon ABCDEF of sides 1 m, in the directions AB, BC, CD, DE, EF and FA respectively. Find the:

 (i) values of P and Q in order that the forces reduce to a couple.

 (ii) magnitude of the moment of the couple.

3. Two biased four–sided dice, having the numbers 1, 2, 3 and 4 on their faces, are thrown together. The Radom variable D represents the modulus of the difference between the numbers on the two hidden faces.

 (a) Show that . (b) Calculate the expected value

4. A continuous random variable X is uniformly distributed in the interval . Show that the variance of X is .

5. A particle is in equilibrium under the action of forces 4 N due North, 8 N due West,  South-East and  N. Find the magnitude and direction of .

6. A car approaching a town covers two successive half-kilometers in 10 and 20 seconds respectively. Assuming that the retardation is uniform, find the further distance the car runs before stopping.

7. (a) Truncate the following to three significant figures:

 (i) 0.056978 (ii) 587899

(b) Given that the numbers *x* = 3.7 and *y*= 22 are rounded off to the given number of decimal places respectively, find the relative error in , correct to three significant figures .

*END*