Probability midterm exam
(Model 2)

Question (1):

(A) A card is drawn at random variable from an ordinary deck of 52 playing cards. Find the probability that it is (a) Ace (b) A jack of hearts (c) A three of club or six of diamonds (d)A hearts (e)Any suit except hearts (f)A ten or speeds (g) Neither a four nor a club?

(B)Four different mathematics books, six different physics books ,and two different chemistry books are to be arranged on a shelf .How many different arrangements are possible if (a) The books in each subject must all stand together , (b) Only the mathematics books must stand together?

Question (2):

The joint density function of two discrete random variable X and Y is given by f(x,y)=c(2x+y), where x and y can assume all integers such that $0 \le x \le 2$, $0 \le y \le 3$ and f(x,y)=0 otherwise.

(a) Find the value of constant C.

(b) Find $P(X \ge 1, Y \le 2).$

(c)Find P $(X = 2, Y = 1).$

(d) Find the marginal probability function of X.

(e) Find the marginal probability function of Y.

(f) Show that random variables X and Y are dependent.

Question (3):

If $X^*=(X-\mu)\backslash\delta$ is a standardized random variable ,Prove that (a) $E(X^*) =0$,(b) Var $(X^*)=1$?