Ans 1)If p is prime then it is an integral domain else it is not.

Ans 2) All but rings c and e are commutative. All of the rings have a unity element. The number 1 is the unity for all of the rings except c and e. The

unity for M_{2X2} is the two by two identity matrix; the unity for M_{NXN} is the n by n identity matrix. The units are as follows:

(a) [1,-1]

(b) C*

(c) [A | |A|=±1]

(d) Q*

Ans 3) 1. (a) Error detected, since an odd number of Is was received; ask for retransmission.

(b) No error detected; accept this block.

(c) No error detected; accept this block.

Ans 4) Hamming distance :

(a) (x ,y) =(x + y) = (010000+ 000101)=(010101)= 3

 (b) (x, y) =(x+ y) =(001100+ 010110)=(011010)= 3

Ans 5) : (a) d y=11 (b) d y= 01