SECTION - 3

Q2
(a)

Sol The farmer has to choose

3 hens out 6 hens.

no of ways out of 6 hens.

no of ways of choosing 3 out of 6. is given by

$${}^6C_3$$

and, 2 pigs out of 5
no. of ways of selection 2 out of 5.

$${}^5C_2$$

and 4 cows out of 8.
no. of ways of selecting 4 out of 8

$${}^8C_4$$

So total no. of choice choose all the 3 things so total no. of choice he has

$= {}^6C_3 \times {}^5C_2 \times {}^8C_4$

$= \frac{6!}{3!3!} \times \frac{5!}{3!2!} \times \frac{8!}{4!4!}$

$= \frac{6\times5\times4}{3\times2} \times \frac{5\times4}{2} \times \frac{8\times7\times5\times6}{4\times3\times2}$

$= 14000$

So the total no of choice that farmer have is 14000.

(b) Total no of persons in party = 12

To shake hands we need 2 person so No. of ways in which we can choose 2 persons out of 12 without rearrangement will give us the total no. of hand shake happen in party.

No. of ways to sense 2 out of 12 = $^{12}C_2$

No of handshakes in party $= \frac{12!}{10! \times 2!}$

$= \frac{12 \times 11}{2} = 66$

So total no. of hand shakes happen in party is 66.