Probability

1) Can the experimental probability of an event be a negative number? If not, why?
2) Can the experimental probability of an event be greater than 1? Justify your anwer.
3) As the number of tosses of a coin increases, the ratio of the number of heads to the total number of tosses will be $\frac{1}{2}$. Is it correct? If not, write the correct one.

4) A company selected 4000 households at random and surveyed them to find out a relationship between income level and the number of television sets in a home. The information so obtained is listed in the following table:

Monthly income (in Rs)	Number of Televisions/household			
	0	1	2	Above 2
<10000	20	80	10	0
10000 - 14999	10	240	60	0
15000 - 19999	0	380	120	30
20000 - 24999	0	520	370	80
25000 and above	0	1100	760	220

Find the probability:

(i) of a household earning Rs 10000 – Rs 14999 per year and having exactly one television.

(ii) of a household earning Rs 25000 and more per year and owning 2 televisions.

(iii) of a household not having any television.

5) Two dice are thrown simultaneously 500 times. Each time the sum of two numbers appearing on their tops is noted and recorded as given in the following table:

Sum	Frequency
2	14
3	30
4	42
5	55
6	72
7	75
8	70
9	53
10	46
11	28
12	15

If the dice are thrown once more, what is the probability of getting a sum

(i)   3?   (ii)   more than 10?

(iii)   less than or equal to 5?   (iv)   between 8 and 12?

6) Bulbs are packed in cartons each containing 40 bulbs. Seven hundred cartons were examined for defective bulbs and the results are given in the following table:

Number of defective bulbs	0	1	2	3	4	5	6	more than 6
Frequency	400	180	48	41	18	8	3	2

One carton was selected at random. What is the probability that it has

(i)   no defective bulb?

(ii)   defective bulbs from 2 to 6?

(iii)   defective bulbs less than 4?

7) Over the past 200 working days, the number of defective parts produced by a machine is given in the following table:

Number of defective parts	0	1	2	3	4	5	6	7	8	9	10	11	12	13
Days	50	32	22	18	12	12	10	10	10	8	6	6	2	2

Determine the probability that tomorrow's output will have

(i)   no defective part

(ii) atleast one defective part

(iii) not more than 5 defective parts

(iv) more than 13 defective parts

8) A recent survey found that the ages of workers in a factory is distributed as follows:

Age (in years)	20 - 29	30 - 39	40 - 49	50 - 59	60 and above
Number of workers	38	27	86	46	3

If a person is selected at random, find the probability that the person is:

(i)   40 years or more

(ii) under 40 years

(iii) having age from 30 to 39 years

(iv) under 60 but over 39 years