

**Topic: Binomial Distribution**

**Day 2 Question 1**

In a large restaurant an average of 3 out of every 5 customers ask for water with their meal.

A random sample of 10 customers is selected.

(a) Find the probability that

- (i) exactly 6 ask for water with their meal,
- (ii) less than 9 ask for water with their meal.

**(3)**

A second random sample of 50 customers is selected.

(b) Find the smallest value of  $n$  such that

$$P(X < n) \geq 0.9,$$

where the random variable  $X$  represents the number of these customers who ask for water.

**(1)**

**Day 2 Question 2**

The probability of a bolt being faulty is 0.3. Find the probability that in a random sample of 20 bolts there are

(a) exactly 2 faulty bolts,

**(1)**

(b) more than 3 faulty bolts.

**(2)**

These bolts are sold in bags of 20. John buys 10 bags.

(c) Find the probability that exactly 6 of these bags contain more than 3 faulty bolts.

**(3)**