

## **Question # 1 (15 marks)**

In the United States, voters who are neither Democrat nor Republican are called Independents. It is believed that 43% and 47% of all voters are Democrat and Republican, respectively. A survey asked 25 people to identify themselves as Democrat, Republican, or Independent.

- A) What is the probability that none of the people are Independent?
- B) What is the probability that fewer than five people are Independent?
- C) What is the probability that more than two people are Independent?
- D) What is the expected number of Independents?
- E) What is the probability that exactly five people are Democrat?

## **Question # 2 (15 marks)**

Tablets are becoming the norm for business professionals today. There is a lot of information that you can use to compare a tablet and conventional laptop. One such piece of information is the lifespan of these devices. The lifespan of laptops is normally distributed with a mean of 3.9 years and a standard deviation of 1 year. The lifespan of mobile tablets is normally distributed with a mean of 3.5 years and a standard deviation of 0.5 years.

- A) Find the probability that a laptop purchased by a customer will last for under 3.5 years.
- B) Find the probability that the average lifespan of 4 randomly selected tablets purchased lies between 3.2 years and 4 years.
- C) Find the probability that if four laptops are randomly selected all four will last under 3.5 years.
- D) If a random sample of 10 laptops and a random sample of 15 tablets are selected, what is the probability that the average laptop lifespan will exceed the average tablet lifespan?
- E) A tablet manufacturer claims that their tablet's lifespan is in the top 5% of the population. Find the minimum lifespan needed to be in the top 5%.

## Question # 1 (Answer Key)

1A	0.0718
1B	0.9020
1C	0.4629
1D	2.5
1E	0.0102

## Question # 2 (Answer Key)

2A	0.3446
2B	0.8621
2C	0.0141
2D	0.8790
2E	4.3225