

### Statistics 3 – Task

- 1- What is a Chi-Square Test? Examples & Application , and use it in Data Science. ?
- 2- What is degree of freedom. ?
- 3- what is t distribution and f distribution and how can use it in data science ?
- 4- What does Probability Distribution mean?
- 5- Describe the types of Probability Distributions?

### Problem 2:

The number of customers arriving at a grocery store is a Poisson random variable. On average 10 customers arrive per hour. Let  $X$  be the number of customers arriving from 10am to 11:30am

. What is  $P(10 < X \leq 15)$ ?

4. Find median and mode of the messages received on 9 consecutive days 15, 11, 9, 5, 18, 4, 15, 13, 17.

- a) 13, 6
- b) 13, 18
- c) 18, 15
- d) 15, 16

5. Mode is the value of  $x$  where  $f(x)$  is a maximum if  $X$  is continuous.

- a) True
- b) False

6.  $E(XY) = E(X)E(Y)$  if  $x$  and  $y$  are independent.

- a) True

b) False

7. A coin is tossed up 4 times. The probability that tails turn up in 3 cases is \_\_\_\_\_

- a) 12
- b) 13
- c) 14
- d) 16

8. If  $E$  denotes the expectation the variance of a random variable  $X$  is denoted as?

- a)  $(E(X))^2$
- b)  $E(X^2) - (E(X))^2$
- c)  $E(X^2)$
- d)  $2E(X)$

9.  $X$  is a variate between 0 and 3. The value of  $E(X^2)$  is \_\_\_\_\_

- a) 8
- b) 7
- c) 27
- d) 9

10. The random variables  $X$  and  $Y$  have variances 0.2 and 0.5 respectively. Let  $Z = 5X - 2Y$ . The variance of  $Z$  is?

- a) 3
- b) 4
- c) 5
- d) 7

6. A table with all possible value of a random variable and its corresponding probabilities is called \_\_\_\_\_

- a) Probability Mass Function
- b) Probability Density Function
- c) Cumulative distribution function
- d) Probability Distribution

7. A variable that can assume any value between two given points is called \_\_\_\_\_

- a) Continuous random variable
- b) Discrete random variable
- c) Irregular random variable

d) Uncertain random variable

8. If a variable can certain integer values between two given points is called \_\_\_\_\_

- a) Continuous random variable
- b) Discrete random variable
- c) Irregular random variable
- d) Uncertain random variable

9. The expected value of a discrete random variable 'x' is given by \_\_\_\_\_

- a)  $P(x)$
- b)  $\sum P(x)$
- c)  $\sum x P(x)$
- d) 1

10. If 'X' is a continuous random variable, then the expected value is given by \_\_\_\_\_

- a)  $P(X)$
- b)  $\sum x P(x)$
- c)  $\int X P(X)$
- d) No value such as expected value

11. Out of the following values, which one is not possible in probability?

- a)  $P(x) = 1$
- b)  $\sum x P(x) = 3$
- c)  $P(x) = 0.5$
- d)  $P(x) = -0.5$

12. If  $E(x) = 2$  and  $E(z) = 4$ , then  $E(z - x) = ?$

- a) 2
- b) 6
- c) 0
- d) Insufficient data

1. If the values taken by a random variable are negative, the negative values will have \_\_\_\_\_

- a) Positive probability
- b) Negative Probability
- c) May have negative or positive probabilities

d) Insufficient data

3. The variable that assigns a real number value to an event in a sample space is called \_\_\_\_\_

- a) Random variable
- b) Defined variable
- c) Uncertain variable
- d) Static variable

4. A random variable that assumes a finite or a countably infinite number of values is called \_\_\_\_\_

- a) Continuous random variable
- b) Discrete random variable
- c) Irregular random variable
- d) Uncertain random variable

5. A random variable that assume a infinite or a uncountably infinite number of values is called \_\_\_\_\_

- a) Continuous random variable
- b) Discrete random variable
- c) Irregular random variable
- d) Uncertain random variable

6. If  $\sum P(x) = k^2 - 8$  then, the value of k is?

- a) 0
- b) 1
- c) 3
- d) Insufficient data

7. If  $P(x) = 0.5$  and  $x = 4$ , then  $E(x) = ?$

- a) 1
- b) 0.5
- c) 4
- d) 2

9. Binomial Distribution is a \_\_\_\_\_

- a) Continuous distribution
- b) Discrete distribution
- c) Irregular distribution
- d) Not a Probability distribution

7. Poisson distribution is applied for \_\_\_\_\_

- a) Continuous Random Variable
- b) Discrete Random Variable
- c) Irregular Random Variable
- d) Uncertain Random Variable

Binomial Distribution is of discrete nature, so is its extension Poisson Distribution.

8. If 'm' is the mean of Poisson Distribution, the  $P(0)$  is given by \_\_\_\_\_

- a)  $e^{-m}$
- b)  $e^m$
- c)  $e$
- d)  $m^{-e}$