Statistics MCQs – Continuous Distributions Part 1

1. Which of the following statements is not correct concerning the probability distribution of a continuous random variable?

a. the vertical coordinate is the probability density function

b. the range of the random variable is found on the x-axis

c. the total area represented under the curve will equal 1

d. the area under the curve between points a and b represents the probability that X = a

e. the area under the curve represents the sum of probabilities for all possible outcomes

Answer: D

2. Which of the following is not a characteristic of the normal distribution?

a. it is a symmetrical distribution

b. the mean is always zero

c. the mean, median and mode are equal

d. it is a bell-shaped distribution

e. the area under the curve equals one

Answer: B

3. Which of the following is not a correct statement?

a. the exponential distribution describes the Poisson process as a continuous random variable

b. the exponential distribution is a family of curves, which are completely described by the mean

c. the mean of the exponential distribution is the inverse of the mean of the Poisson

d. the Poisson is a probability distribution for a discrete random variable while the exponential distribution is continuous

e. the area under the curve for an exponential distribution equals 1

Answer: C

4. Which of the following do the normal distribution and the exponential density function have in common?

a. both are bell-shaped

b. both are symmetrical distributions

c. both approach infinity as x approaches infinity

d. both approach zero as x approaches infinity

e. all of the above are features common to both distributions

Answer: D

5. Which of the following statement is not true for an exponential distribution with parameter λ?

a. mean = 1 ⁄ λ

b. standard deviation = 1 ⁄ λ

c. the distribution is completely determined once the value of λ is known

d. the area under the curve is equal to one

e. the distribution is a two-parameter distribution since the mean and standard deviation are equal

Answer: E

6. Which of the following distributions is suitable to model the length of time that elapses before the first employee passes through the security door of a company?

a. exponential

b. normal

c. poisson

d. binomial

e. uniform

Answer: A

7. Which of the following distributions is suitable to measure the length of time that elapses between the arrival of cars at a petrol station pump?

a. normal

b. binomial

c. uniform

d. poisson

e. exponential

Answer: E

8. A multiple-choice test has 30 questions. There are 4 choices for each question. A student who has not studied for the test decides to answer all the questions randomly by guessing the answer to each question. Which of the following probability distributions can be used to calculate the student's chance of getting at least 20 questions right?

a. Binomial distribution

b. Poisson distribution

c. Exponential distribution

d. Uniform distribution

e. Normal distribution

Answer: A

9. It is known that 20% of all vehicles parked on campus during the week do not have the required parking disk. A random sample of 10 cars is observed one Monday morning and X is the number in the sample that do not have the required parking disk. We can assume here that the probability distribution of X is:

a. Binomial

b. Normal

c. Poisson

d. Exponential

e. Any continuous distribution will do

Answer: A

10. Which of the following statements is/are true regarding the normal distribution curve?

a. it is symmetrical

b. it is bell-shaped

c. it is asymptotic in that each end approaches the horizontal axis but never reaches it

d. its mean, median and mode are located at the same point

e. all of the above statements are true

Answer: E

11.Indicate which of the statements below does not correctly apply to normal probability distributions:

a. they are all unimodal (i.e.: have a single mode)

b. they are all symmetrical

c. they all have the same mean and standard deviation

d. the area under the probability curve is always equal to 1

e. for the standard normal distribution $\mu = 0$ and $\sigma = 1$

Answer: C

12. Which of the following is not a characteristic of a binomial experiment?

a. there is a sequence of identical trials

∗b. each trial results in two or more possible outcomes

c. the trials are independent of each other

d. the probability of success, *p*, is the same from one trial to another

e. all of the above are characteristics of a binomial experiment

13. Which probability distribution is appropriate for a count of events when the events of interest occur randomly, independently of one another and rarely?

a. normal distribution

b. exponential distribution

c. uniform distribution

d. poisson distribution

e. binomial distribution

Answer: D

14. Which of the following cannot generate a Poisson distribution?

a. The number of cars arriving at a parking garage in a one-hour time interval

b. The number of telephone calls received in a ten-minute interval

c. The number of customers arriving at a petrol station

d. The number of bacteria found in a cubic yard of soil

e. The number of misprints per page

Answer: C

15. The mean for the exponential distribution equals the mean for the Poisson distribution only when the former distribution has a mean equal to

a. 1.0

b. 0.5

c. 0.25

d. 2.0

e. the means of the two distributions can never be equal

Answer: A

16. A larger standard deviation for a normal distribution with an unchanged mean indicates that the distribution becomes:

a. narrower and more peaked

b. flatter and wider

c. more skewed to the right

d. more skewed to the left

e. a change in the standard deviation does not change the shape of the distribution

Answer: B

17. Which of the following statements regarding the probability density function, f (x) , of the uniform distribution is correct?

a. the height of the density function differs for different values of X

b. the density function increases as the values of X increase

c. the density function is roughly “bell-shaped”

d. the density function is constant for all values that X can assume

e. none of the above statements are true

Answer: D

18. Which of the following statements is correct?

a. The Exponential distribution is continuous and defined over the interval $(-\infty, \infty)$

b. The mean of the Poisson distribution (with parameter μ) equals the mean of the Exponential distribution (with parameter λ) only when $\mu = \lambda = 1$

c. It is impossible for a Normal distribution to have a negative population mean

d. The Binomial distribution has equal mean and variance only when $p = 0.5$

e. The Uniform distribution is a discrete probability distribution

Answer: B

19.In a popular shopping centre, the waiting time for an ABSA ATM machine is found to be uniformly distributed between 1 and 5 minutes. What is the probability of waiting between 2 and 3 minutes to use the ATM?

a. 0.25

b. 0.50

c. 0.75

d. 0.20

e. 0.40

Answer: A

20.In a popular shopping centre, the waiting time for an ABSA ATM machine is found to be uniformly distributed between 1 and 5 minutes. What is the probability of waiting between 2 and 4 minutes to use the ATM?

a. 0.25

b. 0.50

c. 0.75

d. 0.20

e. 0.40

Answer: B

Frequently Asked Questions (FAQs)

- **Sixty percent of the time, the stoplight will change before you have to wait X seconds, what is the value of X**

(- mo...@ on 06-Jan-2021)

1 Answer

To solve any problem of Mathematics, the best idea is always to understand the concepts. You can visit Examrace YouTube Channel for several important lectures clearing some very important concepts. One of the lectures has been shared below

- mo...@ on 06-Jan-2021