Q) The Area under the whole normal curve is _______ \rightarrow 1
Q) The graph of normal distribution is symmetric with respect to the line \ x = \ \underline{\text{1/2}}
Q) The probability density function of a r.v \ x \ is \ given \ by \ f(x) = kx^3 \ \text{for} \ 0 < x < 1 \text{ and 0 otherwise}. \ Then \ the \ value \ of \ k = \ _______ \rightarrow 4
Q) A discrete random variable can take _______ number of values within range \ \rightarrow \text{Finite}
Q) A continuous random variable can take _______ number of values within range \ \rightarrow \text{infinite}
Q) The normal curve has _______ maximum point/points \ \rightarrow \text{only one}
Q) The mean, median and mode of a normal distribution are _______ \rightarrow \text{Equal}
Q) If a continuous r.v \ x \ has the probability density function \ f(x) = 3x^2 \ \text{for} \ 0 < x < 1 \text{ then the mean} = \ _______ \rightarrow 3/4
Q) Mean of the binomial distribution is _______ \rightarrow np
Q) If \ X \ be \ a \ binomially \ distributed \ random \ variable \ with \ E[X] = 8 \text{ and } Var(X) = 4 \text{ then } n \text{ number of trials} = \ _______ \rightarrow 16
Q) If \ f(x) = e^{-x} \ is \ a \ probability \ density \ function, \ then \ P(X \geq 0.5) = \ _______ \rightarrow 1/e^2
Q) If \ F \ is \ the \ distribution \ function \ of \ random \ variable \ X \ and \ a < b, \ then \ \ P(a < x \leq b) = \ _______ \rightarrow F(b) - F(a)

\[ p(X = x) = \begin{cases} \frac{x}{2}, & x = 1, 2, 3, 4, 5 \\ 0, & \text{otherwise} \end{cases} \]

Q) If \ then \ P(X \ being \ a \ prime \ number) = \ _______ \rightarrow 11/15
Q) Probability of getting 2 heads in tossing 5 coins is _______ \rightarrow 5/16
Q) If \ f(x) = \ k / (1+x^2), \ -\infty < x < \infty \ is \ a \ valid \ probability \ density \ function, \ then \ k = \ _______ \rightarrow 1/\pi
Q) Mean of Binomial distribution is 4 and variance is 2 then p = _______ \rightarrow 1/4
Q) If \ f(x) = a x^2 \ for \ 0 < x < 1 \ is \ probability \ function \ then \ a = _______ \rightarrow 3
Q) If \ z \ is \ normally \ distributed \ with \ mean \ 0 \ and \ variance \ 1, \ then \ p(-1.96 < z < 1.96) = \ _______ \rightarrow 0.9500
Q) If \ X \ be \ a \ normal \ variate \ with \ mean \ 10 \ and \ variance \ 4 \ then \ P(X < 11) = _______ \rightarrow 0.6915
Q) If \ x \ is \ a \ normal \ variate \ with \ mean \ 30, \ \$D \ is \ 5 \ then \ P(26 < x \leq 40) \rightarrow P(0.8 < \frac{Z}{5} \leq 2) = \ _______ \rightarrow 1.16
Q) If \ P(0 \leq Z \leq 1.7) = 0.3770 \ then \ Z \ = \ _______ \rightarrow 1.16
Q) The Distributions in which mean, median and mode are equal _______ \rightarrow \text{Normal Distribution}
Q) The mode of normal distribution is _______ \rightarrow \mu
Q) If the range of \ X \ is \ the \ set \ \{0, 1, 2, 3, 4\} \ and \ p(X=x) = 0.2, \ then \ E(X^2) = _______ \rightarrow 6
Q) The gamma distribution is a _______ \text{family of continuous} \ probability \ distributions \ \rightarrow \text{two-parameter}
Q) If the range of \ X \ is \ the \ set \ \{0, 1, 2, 3, 4\} \ and \ p(X=x) = 0.2, \ then \ mean = _______ \rightarrow 2
Q) Variance of Binomial distribution is _______ \rightarrow npq
Q) If the probability density function of a variable defined as \ f(x) = kx(2-x), \ 0 < x < 2 \ then \ k = _______ \rightarrow 3/4

\[ f(x) = \begin{cases} \frac{x^{k-1}e^{-ix}}{(k)}, & x \geq 0 \\ 0, & \text{otherwise} \end{cases} \]

Q) The gamma distribution is defined as \ \rightarrow \text{exponential}

\[ x \geq 0 \]

\[ \lambda \text{ & } k \text{ are parameters} \]
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Q) The Weibull distribution defined as
\[ f(x) = \begin{cases} \alpha \beta x^{\beta-1} e^{-\alpha x^\beta}, & x > 0 \\ 0, & \text{otherwise} \end{cases} \]
where \( \alpha \) & \( \beta \) parameters

when \( \beta = 1 \), the distribution tends to ________ \( \rightarrow \) exponential

Q) The Weibull distribution is a ____________ family of continuous probability distributions \( \rightarrow \) two-parameter

Q) The probability density function of the gamma random variable \( X \) is
\[ f(x) = \begin{cases} \frac{x^{k-1} e^{-x/k}}{\Gamma(k)}, & x \geq 0 \\ 0, & \text{otherwise} \end{cases} \]
where \( k \) and \( \lambda \) are the parameters then the Mean ________

\( \lambda \times \gamma \)

Q) The probability density function of the gamma random variable \( X \) is
\[ f(x) = \begin{cases} \frac{x^{k-1} e^{-x/k}}{\Gamma(k)}, & x \geq 0 \\ 0, & \text{otherwise} \end{cases} \]
where \( k \) and \( \lambda \) are the parameters then the \( \text{var}(x) = ________ \)

\( \frac{(k^2 + k)}{\lambda^2} \)

Q) The mean of the poisson random variable with parameter \( \lambda \) is ________ \( \rightarrow \) \( \mu = \lambda \)

Q) The standard deviation of the poisson random variable with parameter \( \lambda \) is ________

\( \mu = \sqrt{\lambda} \)

Q) Mean of the binomial distribution is 4 and variance is 2 then \( p = ________ \) \( \rightarrow \) 1/2

Q) As ________ binomial distribution can be approximated by a normal distribution

\( n \times \omega, p \rightarrow 0 \)

Q) The mean of the binomial distribution is ________ then its variance \( \rightarrow \) greater

Q) The expected value of the constants \( b \) is ________ \( \rightarrow b \)

Q) If \( E(x) = 1 \), then mean of \( y = 2x - 3 \) is A) 0 B) 1 C) -1 D) 2 \( \rightarrow \) -1

Q) The shape of the normal curve is ________ \( \rightarrow \) bell shaped curve

Q) A normally distributed variable having mean ______ and standard deviation 1 is said to have the standard normal distribution \( \rightarrow 0 \)

Q) Almost all the area under the standard normal curve is ________ lies between \( \rightarrow -3 \) to +3

Q) \( \text{Var}(X) = ________ \) \( \rightarrow f(x) = \frac{E(X - \mu)^2}{\sqrt{X}} \)

Q) A player tosses two fair coins. He wins Rs100 if two heads occur, Rs200 if one head occurs, and Rs500 if two tails occur. On the other hand, he loses Rs500 if two tails occur. Then the value of the game to the player is ________

\( \rightarrow \) Rs250

Q) In a gambling game, expected value \( E \) of the game is considered to be the value of the game to the player. Game is favorable to the player if ________ \( \rightarrow E > 0 \)

Q) For the density function \( f(x) = 2x/9, 0 \leq x \leq 3 \), the mean is ________ \( \rightarrow 2 \)

Q) \( \Sigma x^k P(X=x) \rightarrow E(X^k) \)
Q) If \( X \) and \( Y \) are independent, then \( \text{Var}(ax+by)=\) _______ \( \rightarrow a^2 \text{Var}(x) + b^2 \text{Var}(Y) \)
Q) If \( X \) and \( Y \) are independent random variables, then \( E(XY)=\) _______ \( \rightarrow E(X).E(Y) \)
Q) If \( X \) is a random variable, then \( \text{Var}(ax+b)=\) _______ \( \rightarrow a^2 \text{Var}(x) \)
Q) The first moment about the mean always _______ \( \rightarrow \) zero
Q) If \( X \) is a random variable then \( E(ax+b)=\) _______ \( \rightarrow aE(x)+b \)

Q) A random variable \( X \) has PDF defined as 
\[
f(x) = \begin{cases} 
2e^{-2x}, & x \geq 0 \\
0, & x < 0 
\end{cases}
\]
then moment generating function=_______ \( \rightarrow \) \( \frac{2}{1-t} \)

Q) A random variable \( X \) with probability function \( p(x)=\)
\( E(X)=\)_______ \( \rightarrow \) does not exit
Q) If \( X \) represents outcome of fair dies is thrown once, then \( E(X^2)=\)_______ \( \rightarrow \) 3.5
Q) The moment generating function of a random variable \( M_X(t) \) defined as _______ \( \rightarrow E(e^{tX}) \)
Q) If \( X \) represents outcome of fair dies is thrown once, then \( E(X)=\) _______ \( \rightarrow \) 3.5
Q) If \( X \) has the variance 9 and \( Y \) has the variance 5 then \( \text{Var}(2X+Y)=\)_______ \( \rightarrow \) 41
Q) If \( k \) is constant, then \( \text{Var}(k)=\)_______ \( \rightarrow \) 0
Q) Moment generating function of poisson distribution is _______ \( \rightarrow e^{2(e^t-1)} \)
Q) Four coins are tossed simultaneously then probability of getting 3 heads is _______ \( \rightarrow \) 0.25
Q) If \( X \) is a poission variate such that \( P(X=4) = P(X=6) \) then mean=_______ \( \rightarrow \) 5
Q) If the variance of a Poisson distribution \( \lambda \) then \( P(X=0)=\)_______ \( \rightarrow \) 0.135
Q) Probability of getting 2 heads in tossing 5 coins is _____ \( \rightarrow \) 5/16
Q) If a continuous r.v has the p.d.f \( f(x) = e^{-2x}, x>0 \) and 0 elsewhere then the mean is _____ \( \rightarrow \) \( \frac{1}{4} \)
Q) If \( x_1, x_2 \) are two independent r.v such that the mean of \( x_1 \) is 4 and \( x_2 \) is 2 then 
\( E(2x_1+3x_2)=\)_______ \( \rightarrow \) 16
Q) If the mean of a poisson distribution is 8, then Variance is_______ \( \rightarrow \) 8
Q) If \( P(X=1) = P(X=2) \) then mean of Poisson distribution are _______ \( \rightarrow \) 2
Q) If \( X \) is a Poisson variate such that \( P(X=1) = 2P(X=3) \) Then \( P(X=0)=\)_______ \( \rightarrow e^{-0.5} \)
Q) For binomial distribution, \( n=10 \) and \( p=0.6 \) then \( E(X^2)=\)_______ \( \rightarrow \) 38.4
Q) The mean of binomial distribution is 3 and variance is \( 9/4 \) then the value of \( n \) is_______ \( \rightarrow \) 12
Q) If \( X \) is a Poisson variate such that \( P(X=k) = P(X=k+1) \) for some positive integer \( K \) then mean =_______ \( \rightarrow \) \( k + 1 \)
Q) The mean and variance of poisson distributions are_______ \( \rightarrow \) Equal
Q) If the probability of a defective bolt is \( 1/8 \) then the mean for the distribution of defective bolt in total of 640 is_______ \( \rightarrow \) 80
Q) If \( X \) is a poisson variate such that \( P(X=3) = P(X=5) \) then mean=_______ \( \rightarrow \) 20
Q) The number of possible samples of size \( n \) from a population of \( N \) units with replacement is _______ \( \rightarrow \) \( \binom{N}{n} \)
Q) The number of possible samples of size \( n \) from a population of \( N \) units without replacement

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is \[ \mathcal{N}_C \]

Q) The statistical constants of the population are called \[ \text{Parameter} \]

Q) If \( E(x) = 1 \), \( E(x^2) = 4 \) then variance of \( y = 2x - 3 \) is \[ 12 \]

Q) If \( X_1, X_2 \) are random variables, and \( a, b \) are constants, then \( E(aX_1 + bX_2) = \frac{N-n}{N-1} \) \[ aE(X_1) + bE(X_2) \]

Q) The finite population correction factor is \[ \frac{N-n}{N-1} \]

Q) For \( N = 1000 \), \( n = 100 \) then the fine population correction factor is \[ 0.9009 \]

Q) If the size of the sample is 25 and standard deviation of the population is 0.1 then the Standard error of the mean of the sampling distribution is \[ 0.02 \]

Q) The number of different sample of size 2 that can be chosen from a finite population of size 25 is \[ 300 \]

Q) The number of different sample of size 2 that can be chosen from a finite population of size 6 is \[ 15 \]

Q) If \( \bar{x} \) is the mean of a random sample of size \( n \) from finite population of size \( N \) with mean and variance \( \sigma^2 \) then \[ \frac{\sigma^2}{\bar{x}} = \frac{\left( \frac{N-n}{N-1} \right)}{n} \]

Q) The marks of 5 students in one subject are 45, 47, 49, 51, 53 and mean of the population is 52 then \[ t = 0.7 \]

Q) If \( x_1, x_2, \ldots, x_n \) constitute a random sample from an infinite population with mean and variance \( \sigma^2 \) then \[ \frac{\sigma^2}{\bar{x}} = \frac{\sigma^2}{\bar{x}} \]

Q) The shape of t-distribution is similar to that of \[ \text{Normal distribution} \]

Q) A population consist of all real numbers is an example of an \[ \text{Infinite sample} \]

Q) If the size of the sample is 15 and standard deviation of the population is 0.4 then the Standard error of the mean of the sampling distribution is \[ 0.1032 \]

Q) A random sample of size 2 is drawn from population 1, 2, 3, 4, consider the sampling distribution of sample means with replacement, then the sample mean is \[ 2.5 \]

Q) If \( n < 30 \), then \[ \frac{\bar{x} - 21}{\sqrt{s}} \] is \[ \text{t-variante} \]

Q) If \( x = 35, \mu = 42.1, \sigma = 8.4 \) and \( n = 25 \) then \( t \) is \[ 3.21 \]