Question # 3 of 10 (Total Marks: 1) Select correct option:
The moment ratios of normal distribution come out to be:
0 and 1
0 and 2
0 and 3 (Page 227)
0 and 4

Question # 4 of 10 (Total Marks: 1) Select correct option:
Suppose the test scores of 600 students are normally distributed with a mean of 76 and standard deviation of 8. The number of students scoring between 70 and 82 is:
272
164
260
328 click here for detail

Question # 5 of 10 (Total Marks: 1) Select correct option:
If P (A) = 0.3 and P (B) = 0.5, find P (A/B) where 'A' and 'B' are independent:

0.3
0.5
0.8
0.15 (Page 162)

Question # 6 of 10 (Total Marks: 1) Select correct option:
If the second moment ratio is less than 3 the distribution will be:
Mesokurtic
Leptokurtic
Platykurtic
None of these

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Question # 7 of 10 (Total Marks: 1) Select correct option:
For the independent events A and B if P (A) = 0.25, P (B) =0.40 then P (A and B) =.....
Select correct option:

0.65
0.1 (Page 162)
0.50
0.15

Question # 8 of 10 (Total Marks: 1) Select correct option:
A random variable X has a probability distribution as follows: X | 0 1 2 3 P(X) | 2k 3k 13k 2k What is the possible value of k:

0.01
0.03
0.05
0.07

Question # 9 of 10 (Total Marks: 1) Select correct option:
The probability of drawing any one spade card is:
1/52
4/52
13/52
52/52

Question # 1 of 10 (Total Marks: 1) Select correct option:
Which of the following is NOT applicable to a Poisson distribution?

IF P = 0.5 & n = 19
IF P = 0.01 & n = 200
IF P = 0.02 & n = 300
IF P = 0.03 & n = 500

Question # 2 of 10 (Total Marks: 1) Select correct option:
The normal distribution has points of infection which are equidistance from the:

Median
Mean (Page 229)
Mode
Mean,Median & Mode

Question # 3 of 10 (Total Marks: 1) Select correct option:
If a random variable X denotes the number of heads when we toss a fair coin 5 times, the X assumed the values:

0,1,2,3
1, 2,3,4,5
0, 1, 2,3,4,5
1, 5, 5

Question # 4 of 10 (Total Marks: 1) Select correct option:
As a rule of thumb, when n>=30, then we can assume that.....is normally distributed:

Probability distribution
Sampling distribution (Page 243)
Binomial distribution
Sampling distribution of sample mean

Question # 5 of 10 (Total Marks: 1) Select correct option:
If b(x, 7, 0.30), the variance of this distribution is:

1.77
1.74
1.44
1.47 (Page 333)

Question # 1 of 10 (Total Marks: 1) Select correct option:
Which of the probability distributions has three parameters?

Binomial distribution
Normal distribution
Hypergeometric distribution (Page 219)
Poisson distribution

Question # 2 of 10 (Total Marks: 1) Select correct option:
A standard deviation obtained from sampling distribution of sample statistics is known as

Sampling error
Standard error (Page 240)
Minimum error
Universal error

Question # 3 of 10 (Total Marks: 1) Select correct option:
A parameter is a ..... quantity.

Constant
Variable
Sample
Random

Question # 4 of 10 (Total Marks: 1) Select correct option:
How can you define statistical inference?
A decision, estimate, prediction or generalization about the population based on information contained in a sample click here for detail
A statement made about a sample based on the measurements in that sample
A set of data selected from a larger set of data
A decision, estimate, prediction or generalization about sample based on information contained in a population

Question # 5 of 10 (Total Marks: 1) Select correct option:
Which of the following is most important and most widely used method in point estimation?

The method of moments
The method of fractional moments
The method of leas square (Page 263)
The method of maximum likelihood

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Question # 6 of 10 (Total Marks: 1) Select correct option:
Binomial distribution is skewed to the right if:

p=q
P<q (Page 215)
p>q
p=n

Question # 7 of 10 (Total Marks: 1) Select correct option:
In a discrete distribution function, F(23) can be stated as:

P (there are at most 23 successes)
P (there are at least 23 successes)
P (there are less than 23 successes)
P (there are more than 23 successes)

Question # 8 of 10 (Total Marks: 1) Select correct option:
The Probabilities of the various values of the sample satistic can be computed using the..... definition of probability.

Subjective
Objective
Classical (Page 149)
None of the baove

Question # 9 of 10 (Total Marks: 1) Select correct option:
E(10X +3) =_____

10 E(X)
E(X)+3
10 E(X)+3
100E(X)

Question # 1 of 10 (Total Marks: 1) Select correct option:
In which of the following situations binomial distributions is approximate to normal distribution?

n = 50, p = 0.01
n = 500, p = 0.001
n = 100, p = 0.05
n = 50, p = 0.02 click here for detail

Question # 2 of 10 (Total Marks: 1) Select correct option:
The location and shape of the normal curve is (are) determined by:

Mean
Variance
Mean & variance
Mean & standard deviation click here for detail

Question # 3 of 10 (Total Marks: 1) Select correct option:
A random experiment has five outcomes in its sample space {s1, s2, s3, s4, s5}. If P(s1)=0.2,P(s2)=0.3, P(s3)=0.1 and P(s4)=0.2 then P(s5)=?

1
0.2
0.8
0.5

کامیاب وکامران زندگی یہی ہے کہ جہاں رہو جس حال میں رہ خوش رہو

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Question # 4 of 10 (Total Marks: 1) Select correct option:
The joint density function f(x,y) will be a pdf if

Both of integrals f(x,y) dx dy =1 (Page 200)
Both of integrals f(x,y) dx dy >1
Both of integrals f(x,y) dx dy <1
Both of integrals f(x,y) dx dy =0

Question # 5 of 10 (Total Marks: 1) Select correct option:
Which of the following is correct property for joint probability distribution of X and Y:

Sigma f(X,Y)=1 (Page 194)
Sigma f(Y,X)=1
Both of above
None of above

Question # 6 of 10 (Total Marks: 1) Select correct option:
A random variable that can assume every possible value in an interval [a, b]:

Discrete variable
Continuous variable (Page 9)
Qualitative variable
Categorical variable

Question # 7 of 10 (Total Marks: 1) Select correct option:
Normal approximation to the binomial distribution is used when:

np>5
nq>5
Both of the above (Page 235)
None of the above

Question # 8 of 10 (Total Marks: 1) Select correct option:
The Maximum Likelihood Estimators (MLE) are ..... and ..... but not necessarily .....
Unbiased, consistent, efficient
Consistent, unbiased, efficient
Unbiased, efficient, consistent
Consistent, efficient, unbiased (Page 264)

کتنا شریف ہے وہ غمزدہ دل جو سب کو خوش کرنے کی کوشش کرتا ہے

Question # 5 of 10 (Total Marks: 1) Select correct option:
If a statistic used as an estimator, has its expected value equal to the true value of the population parameter being estimated then it is called.....

Consistent
Unbiased (Page 258)
Efficient
Sufficient

Question # 6 of 10 (Total Marks: 1) Select correct option:
In moments method, how many equations are needed to find the 2 unknown parameters?

2 (Page 263)
3
n/2

Question # 7 of 10 (Total Marks: 1) Select correct option:
Which of the following is desirable for a good point estimator?

Consistency
Unbiasedness
Efficiency
All of these (Page 258)

Question # 8 of 10 (Total Marks: 1) Select correct option:
The distribution function (df) is also known as

Probability distribution
Probability mass function
Probability density function
Cumulative distribution function (Page 173)

Question # 9 of 10 (Total Marks: 1) Select correct option:
If X and Y are two discrete r.v's with joint probability function f(x,y), then the conditional probability functior Y given X, f(y|x) is given by

f(yj | xi) = f(xi, yj) / g(xi) (Page 195)
f(yj | xi) = f(xi, yj) / h(yj)
f(yj | xi) = f(xi, yj) / Sum of g(xi)
f(yj | xi) = f(xi, yj) / sum of h(yj)

Question # 4 of 10 (Total Marks: 1) Select correct option:
A fair coin is tossed three times, the probability that at least one head appears,

1/8
7/8 (HHH,HHT,HTH, HTT, THH THT TTH TTT)
3/8
5/8

Question # 5 of 10 (Total Marks: 1) Select correct option:
In probability distribution, the sum of probabilities is equals to

0
0.1
0.5
1 click here for detail

Question # 6 of 10 (Total Marks: 1) Select correct option:
When a coin is tossed 3 times, the probability of getting 3 tails is

1/8 (HHH,HHT,HTH, HTT, THH THT TTH TTT)
3/8
3/6
2/8

Question # 7 of 10 (Total Marks: 1) Select correct option:
In how many ways can a team of 11 players be chosen from a total of 16 players?

4368
2426
5400
2680

Question # 8 of 10 (Total Marks: 1) Select correct option:
The standard deviation of c (constant) is

c
c square
0 click here for detail
does not exist

اچھائی کرنے کے لئے ہمیشہ کسی بہانے کی تلاش میں رہو

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Question # 9 of 10 (Total Marks: 1) Select correct option:
Let E and F be events associated with the same experiment. Suppose the E and F are independent and that P(E) = 1/4 and P(F) = 1/2 Then P(E U F) is:

1/8
3/4 (Page 157)
7/8
5/8

STA 301 – Quizzes

Question # 1 of 10 (Total Marks: 1) Select correct option:
In which of the following situations binomial distributions is approximate to normal distribution?

n = 50, p = 0.01
n = 500, p = 0.001
n = 100, p = 0.05
n = 50, p = 0.02 click here for detail

Question # 8 of 10 (Total Marks: 1) Select correct option:
If a die is rolled, what is the probability of getting an even number greater than 2?
1/2
1/3 2/6 = 1/3
2/3
5/6

Question # 9 of 10 (Total Marks: 1) Select correct option:
In a Discrete probability distribution, P (x > 23) is read as:
P (there are more than 23 successes)
P (there are less than 23 successes)
P (there are at least 23 successes)
P (there are at most 23 successes)

Question # 10 of 10 (Total Marks: 1) Select correct option:
A dormitory on campus houses 200 students. 120 are male, 50 are upper division students, and 40 are upper division male students.A student is selected at random. The probability of selecting a lower division student, given the student is a female, is:

7/8
7/20
7/15
1/4

Question # 1 of 10 (Total Marks: 1) Select correct option:
The function F(x) gives the probability of the event that X takes a value .....
Less than x
Greater or equal to x
Less or equal x (Page 173)
Equal to x

Question # 2 of 10 (Total Marks: 1) Select correct option:
In a simple regression line model ,it is assume that the intercept parameter is equal to zero,
The regression line will pass through the origin.
The regression line will pass through the point (0,10)
The regression line will pass through the point (0,-10)
The slope of the line will also be zero.

Question # 3 of 10 (Total Marks: 1) Select correct option:
If p(AnB)=p(A/B).p(B),then A and B are
Independent
Dependant
Equally likely
Mutually exclusively

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Question # 4 of 10 (Total Marks: 1) Select correct option:
A fair coin is tossed three times, the probability that at least one head appears,

1/8
7/8 (HHH,HHT,HTH, HTT, THH THT TTH TTT)
3/8
5/8

Question # 5 of 10 (Total Marks: 1) Select correct option:
In probability distribution, the sum of probabilities is equals to

0
0.1
0.5
1 click here for detail

Question # 6 of 10 (Total Marks: 1) Select correct option:
When a coin is tossed 3 times, the probability of getting 3 tails is

1/8 (HHH,HHT,HTH, HTT, THH THT TTH TTT)
3/8
3/6

Question # 10 of 10 (Total Marks: 1) Select correct option:
If P (B|A) = 0.25 and P (A and B) =0.20, then P (A) is

0.05
0.80 (Page 159)
0.95
0.75

Question # 1 of 10 (Total Marks: 1) Select correct option:
A student solved 25 questions from first 50 questions of a book to be solved. The probability that he will solve the remaining all questions is:

0.25
0.5
1
0

Question # 1 of 10 (Total Marks: 1) Select correct option:
The classical definition of probability assumes:

Exhaustive events
Mutually exclusive events
Equally likely evens (Page 151)
Independent evens

Question # 2 of 10 (Total Marks: 1) Select correct option:
In scatter diagram, the variable plotted along Y-axis is:
Independent variable
Dependent variable
Continuous variable
Discrete variable

Question # 3 of 10 (Total Marks: 1) Select correct option:
Which of the following measures of dispersion are based on deviations from the mean?

Variance
Standard deviation
Mean deviation
All of the these

Question # 4 of 10 (Total Marks: 1) Select correct option:
What does it mean when a data set has a standard deviation equal to zero?
All values of the data appear with the same frequency.
The mean of the data is also zero.
All of the data have the same value. Click here for detail
There are no data to begin with.

Question # 5 of 10 (Total Marks: 1) Select correct option:
A set of possible values that a random variable can assume and their associated probabilities of occurrence are referred to as _____.

Probability distribution
The expected return
The standard deviation
Coefficient of variation

Question # 6 of 10 (Total Marks: 1) Select correct option:
Which of the following can never be probability of an event?

0
1
0.5
-0.5

Question # 7 of 10 (Total Marks: 1) Select correct option:
The standard deviation of -1, -1, -1, -1 will be

1
-1
0
Does not exist

Question # 8 of 10 (Total Marks: 1) Select correct option:
The Special Rule of Addition is used to combine:

Independent Events
Mutually Exclusive Events click here for detail
Events that total more than 1.00
Events based on subjective probabilities

بہادر آدمی ایک مرتبہ جبکہ بزدل آدمی کئی مرتبہ مرتا ہے

Question # 4 of 10 (Total Marks: 1) Select correct option:
If we roll a die then probability of getting a '6' will be

2/6
1/6
4/6
1

Question # 5 of 10 (Total Marks: 1) Select correct option:
If P(A) = 0.45, P(B) = 0.35, and P(A and B) = 0.25, then P(A | B) is:

1.4
1.8
0.714 0.25/0.35 = 0.714 (Page 159)
0.556

Question # 6 of 10 (Total Marks: 1) Select correct option:
Which of the following is not a measure of central tendency?

Percentile
Quartile
Standard deviation
Mode

Question # 7 of 10 (Total Marks: 1) Select correct option:
Random experiment can be repeated any no. of times under the..... conditions.
Different
Similar (Page 144)

Question # 9 of 10 (Total Marks: 1) Select correct option:
The simultaneous occurrence of two events is called:
Joint probability (Page 194)
Subjective probability
Prior probability
Conditional probability

Question # 10 of 10 (Total Marks: 1) Select correct option:
In regression analysis, the variable that is being predicted is the

Dependent variable click here for detail
Independent variable
Intervening variable
None of these

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Question # 1 of 10 (Total Marks: 1) Select correct option:
The probability of continuous random variable x on any particular point is always zero..
Yes (Page 186)
No

Question # 2 of 10 (Total Marks: 1) Select correct option:
P(an event) =no of favorable outcome/total no. of outcomes is the definition of
Subjective approach (Page 149)
Objective approach

Question # 3 of 10 (Total Marks: 1) Select correct option:
If C is a constant ,then E(c)=
0
1
C (Page 180) rep
-c

Question # 4 of 10 (Total Marks: 1) Select correct option:
When we toss a fair coin 4 times, the sample space consists of....points.
4
8
12
16

Question # 5 of 10 (Total Marks: 1) Select correct option:
If we roll three fair dices then the total number of outcomes is:
6
36
216 6*6*6=216

Question # 9 of 10 (Total Marks: 1) Select correct option:
set which is the sub-set of every set is

Empty Set (Page 134)
Power Set
Universal Set
Super Set

Question # 10 of 10 (Total Marks: 1) Select correct option:
When two dice are rolled the number of possible sample points is :

6
12
24
36 (Page 145)

Question # 1 of 10 (Total Marks: 1) Select correct option:
If two events A and B are not mutually exclusive then

P (A or B) = P (A) + P (B) – P (A and B) (Page 157)
P (A or B) = P (A) + P (B)
P (A or B) = P (A) x P (B)
P (A or B) = P (A) + P (B)

Question # 2 of 10 (Total Marks: 1) Select correct option:
Evaluate (10-4)!

1000
720
480
32

Question # 3 of 10 (Total Marks: 1) Select correct option:
When we toss a coin , we get only:

1 outcome
2 outcome
3 outcome
4 outcome

اطمینان قلب چاہتے ہو تو حسد سے دور رہو

Question No: 10 (Marks: 1) - Please choose one
Which one is the correct formula for finding desired sample size?

- $n=\left(\frac{Z_{\alpha/2}.\sigma}{e}\right)^2$ **(Page 276)**
- $n=\left(\frac{Z_{\alpha/2}.\sqrt{\sigma}}{e}\right)^2$
- $n=\left(\frac{Z_{\alpha/2}.\bar{X}}{e}\right)^2$
- $n=\frac{Z_{\alpha/2}.\sigma}{e}$
-

خدا کے سوا کسی سے امید مت رکھو

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Question No: 11 (Marks: 1) - Please choose one
A discrete probability function f(x) is always:

- Non-negative
- Negative
- **One (Page 168) rep**
- Zero

Question No: 12 (Marks: 1) - Please choose one
E(4X + 5) =_____

- 12 E (X)
- **4 E (X) + 5**
- 16 E (X) + 5
- 16 E (X)

Question No: 13 (Marks: 1) - Please choose one
How P(X + Y < 1) can be find:

- f(0, 0) + f(0, 1) + f(1, 2)
- f(2, 0) + f(0, 1) + f(1, 0)
- f(0, 0) + f(1, 1) + f(1, 0)
- f(0, 0) + f(0, 1) + f(1, 0)

Question No: 14 (Marks: 1) - Please choose one
$f(x|1)=$
The _____:

- $f(1,1)$
- $f(x,1)$
- $\frac{f(x,1)}{h(1)}$ **(Page 198) rep**
- $\frac{f(x,1)}{h(x)}$
-

Question No: 5 (Marks: 1) - Please choose one
The Chi- Square distribution is continuous distribution ranging from:

- $-\infty \leq \chi^2 \leq \infty$
- $-\infty \leq \chi^2 \leq 1$
- $-\infty \leq \chi^2 \leq 0$
- **$0 \leq \chi^2 \leq \infty$ (Page 307) rep**

Question No: 6 (Marks: 1) - Please choose one
If X and Y are random variables, then $E(X-Y)$ is equal to:

- $E(X)+E(Y)$
- $E(X)-E(Y)$ **(Page 202) rep**
- $X-E(Y)$
- $E(X)-Y$

Question No: 7 (Marks: 1) - Please choose one
If $\hat{y}$ is the predicted value for a given x-value and b is the y-intercept then the equation of a regression line for an independent variable x and a dependent variable y is:

- **$\hat{y} = mx + b$, where m = slope (Page 121) rep**
- $x = \hat{y} + mb$, where m = slope
- $\hat{y} = x/m + b$, where m = slope
- $\hat{y} = x + mb$, where m = slope

Question No: 8 (Marks: 1) - Please choose one
The location of the critical region depends upon:

- **Null hypothesis**
- **Alternative hypothesis (Page 281) rep**
- Value of alpha
- Value of test-statistic

وہ لوگ مبارک ہیں جو الفاظ سے نصیحت نہیں کرتے بلکہ عمل سے کرتے ہیں

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Question No: 9 (Marks: 1) - Please choose one
The variance of the t-distribution is give by the formula:

- $\sigma^2 = \sqrt{\frac{\nu}{\nu-2}}$
- $\sigma^2 = \frac{\nu^2}{\nu-2}$
- $\sigma^2 = \frac{\nu}{\nu-1}$
- $\sigma^2 = \frac{\nu}{\nu-2}$ **(Page 293)**

Question No: 1 (Marks: 1) - Please choose one
For a particular data the value of Pearson's coefficient of skewness is greater then zero. What will be the shape of distribution?

- ► **Negatively skewed**
- ► J-shaped
- ► Symmetrical
- ► **Positively skewed (Page 110)**

Question No: 2 (Marks: 1) - Please choose one
In measures of relative dispersion unit of measurement is:

- ► **Changed**
- ► **Vanish Rep**
- ► Does not changed
- ► Dependent

Question No: 3 (Marks: 1) - Please choose one
The F-distribution always ranges from:

- ► 0 to 1
- ► 0 to -∞
- ► -∞ to +∞
- ► **0 to +∞ (Page 312) rep**

Question No: 4 (Marks: 1) - Please choose one
In chi-square test of independence the degrees of freedom are:

- ► **n - p**
- ► n - p-1
- ► n - p- 2
- ► n – 2

اپنی مرضی اور اللہ کی مرضی میں فرق کا نام غم ہے

Question No: 15 (Marks: 1) - Please choose one
The area under a normal curve between 0 and -1.75 is

- .0401
- .5500
- .4599 **(Page 230) rep**
- .9599

Question No: 16 (Marks: 1) - Please choose one
In normal distribution M.D. =

- 0.5σ
- 0.75σ
- 0.7979σ Click here for detail **rep**
- 0.6445σ

Question No: 17 (Marks: 1) - Please choose one
In an ANOVA test there are 5 observations in each of three treatments. The degrees of freedom in the numerator and denominator respectively are.....

- 2, 4
- 3, 15
- 3, 12
- **2, 12**

Question No: 18 (Marks: 1) - Please choose one
A set that contains all possible outcomes of a system is known as

- Finite Set
- Infinite Set
- **Universal Set (Page 134)**
- **No of these**

Question No: 19 (Marks: 1) - Please choose one
Stem and leaf is more informative when data is :

- Equal to 100
- Greater Than 100
- **Less than 100** click here for detail rep
- In all situations

فرقہ بندی ہی ہماری قوم کا زوال کا باعث ہے

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Question No: 20 (Marks: 1) - Please choose one
A population that can be defined as the aggregate of all the conceivable ways in which a specified event can happen is known as:

- Infinite population
- Finite population
- Concrete population
- **Hypothetical population (Page 12)**

Question No: 16 (Marks: 1) - Please choose one
The F- test statistic in one-way ANOVA is:

- SSW / SSE
- MSW / MSE
- SSE / SSW
- **MSE / MSW (Not sure)**

Question No: 17 (Marks: 1) - Please choose one
The continuity correction factor is used when:

- The sample size is at least 5
- Both *nP* and *n (1-P)* are at least 30
- **A continuous distribution is used to approximate a discrete distribution rep**
- The standard normal distribution is applied

Question No: 18 (Marks: 1) - Please choose one
A uniform distribution is defined by:

- **Its largest and smallest value** click here for detail
- Smallest value
- Largest value
- Mid value

Question No: 19 (Marks: 1) - Please choose one
Which graph is made by plotting the mid point and frequencies?

- **Frequency polygon (Page 34)**
- Ogive
- Histogram
- Frequency curve

Question No: 20 (Marks: 1) - Please choose one
In a set of 20 values all the values are 10, what is the value of median?

- 2
- 5
- **10**
- 20

ہر چیز کی ایک پہچان ہوتی ہے اور عقلمند کی پہچان غور و فکر کرنا ہے اور غور و فکر کی پہچان خاموشی ہے

Question No: 7 (Marks: 1) - Please choose one

$$\frac{\ell^{-0.135}\ 0.135^{1}}{1!}$$

For the Poisson distribution P(x) = the mean value is :

► 2
► 5
► 10
► **0.135 (Page 222) rep**

Question No: 8 (Marks: 1) - Please choose one
When two coins are tossed simultaneously, P (one head) is:

► $\frac{1}{4}$
► $\frac{1}{2}$
► $\frac{3}{4}$
► 1

Question No: 9 (Marks: 1) - Please choose one
From point estimation, we always get:

► **Single value (Page 257) rep**
► Two values
► Range of values
► Zero

Question No: 10 (Marks: 1) - Please choose one

$$S^2 = \frac{\sum(x-\bar{x})^2}{n}$$

The sample variance is:

► Unbiased estimator of σ^2
► **Biased estimator of σ^2 (Page 260) rep**
► Unbiased estimator of μ
► None of these

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Question No: 11 (Marks: 1) - Please choose one
Var(4X + 5) =_____

► 16 Var (X)
► 16 Var (X) + 5
► **4 Var (X) + 5 rep**
► 12 Var (X)

Question No: 12 (Marks: 1) - Please choose one
When f (x, y) is bivariate probability density function of continuous r.v.'s X and Y, then

$$\int_{-\infty}^{\infty}\int_{-\infty}^{\infty} f(x,y)\,dx\,dy$$

is equal to:

► **1 rep**
► 0
► -1
► ∞

Question No: 13 (Marks: 1) - Please choose one
The area under a normal curve between 0 and -1.75 is

► .0401
► .5500
► **.4599 (Page 230) rep**
► .9599

Question No: 14 (Marks: 1) - Please choose one
When a fair die is rolled, the sample space consists of:
► 2 outcomes
► 6 outcomes
► **36 outcomes (Page 145)**
►16 outcomes

Question No: 15 (Marks: 1) - Please choose one
When testing for independence in a contingency table with 3 rows and 4 columns, there are _____ degrees of freedom.
► 5
► **6 (Page 341)**
► 7
► 12

Question No: 10 (Marks: 1) - Please choose one

An estimator T is said to be unbiased estimator of θ if

- ► $E(T) = \theta$ **(Page 258) rep**
- ► E (T) =T
- ► E (T) =0
- ► E (T) =1

Question No: 11 (Marks: 1) - Please choose one

If the following is a probability distribution, then what is the value of 'a':

X	1	2	3
P(X)	0.1	a	0.1

- ► 0.6
- ► **0.8**
- ► 0.2
- ► 0.4

Question No: 12 (Marks: 1) - Please choose one

A discrete probability function f(x) is always:

- ► Non-negative
- ► Negative
- ► **One (Page 168)**
- ► Zero

Question No: 13 (Marks: 1) - Please choose one

An expected value of a random variable is equal to:

- ► Variance
- ► **Mean (Page 191)**
- ► Standard deviation
- ► Covariance

افضل انسان وہ ہے جو اپنی اصلاح کی کوشش کرتا ہے

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Question No: 14 (Marks: 1) - Please choose one

The $f(x|1) =$ _____:

- ► $f(1,1)$
- ► $f(x,1)$
- ► $\frac{f(x,1)}{h(1)}$ **(Page 198)**
- ► $\frac{f(x,1)}{h(x)}$

Question No: 15 (Marks: 1) - Please choose one

The area under a normal curve between 0 and -1.75 is

- ► .0401
- ► .5500
- ► **.4599 (Page 230)**
- ► .9599

Question No: 16 (Marks: 1) - Please choose one

The continuity correction factor is used when:

- ► The sample size is at least 5
- ► Both *nP* and *n (1-P)* are at least 30
- ► **A continuous distribution is used to approximate a discrete distribution** Click here for detail
- ► The standard normal distribution is applied

Question No: 17 (Marks: 1) - Please choose one

Which of the following is impossible in sampling:

- ► Destructive tests
- ► **Heterogeneous**
- ► To make voters list
- ► None of these

اطمینان قلب چاہتے ہو تو حسد سے دور رہو

Question No: 5 (Marks: 1) - Please choose one
Evaluate: (9-4)!

- 362880
- **120**
- 24
- 6

Question No: 6 (Marks: 1) - Please choose one
Which formula represents the probability of the complement of event A:

- $1 + P(A)$
- **$1 - P(A)$ (Page 156)**
- $P(A)$
- $P(A) - 1$

Question No: 7 (Marks: 1) - Please choose one
Ideally the width of confidence interval should be:

- **0 (Page 270)**
- 1
- 99
- 100

Question No: 8 (Marks: 1) - Please choose one

If the sampling distribution of $\bar{X}$ is normal, the interval $\mu_{\bar{x}} \pm 3\sigma_{\bar{x}}$ includes:

- 99% of the sample means
- **99.73% of the sample means (Page 228)**
- 98% of the sample means
- 95% of the sample means

Question No: 9 (Marks: 1) - Please choose one
The probability distribution of a statistic is called the:

- Population distribution
- Frequency distribution
- **Sampling distribution** click here for detail
- Sample distribution

جھوٹ رزق کو کھا جاتا ہے

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Question No: 10 (Marks: 1) - Please choose one
An estimator T is said to be unbiased estimator of θ if

- **$E(T) = \theta$ (Page 258) rep**
- $E(T) = T$
- $E(T) = 0$
- $E(T) = 1$

Question No: 11 (Marks: 1) - Please choose one
If the following is a probability distribution, then what is the value of 'a':

X	1	2	3
P(X)	0.1	a	0.1

- 0.6
- **0.8**
- 0.2
- 0.4

Question No: 12 (Marks: 1) - Please choose one
A discrete probability function f(x) is always:

- Non-negative
- Negative
- **One (Page 168)**

Question No: 18 (Marks: 1) - Please choose one
Which of the following is a systematic arrangement of data into rows and columns?

- Classification
- **Tabulation rep**
- Bar chart
- Component bar chart

Question No: 19 (Marks: 1) - Please choose one
Which one of the following statements is true regarding a sample?

- **It is a part of population (Page 13)**
- It must contain at least five observations
- It refers to descriptive statistics
- It produces True value

Question No: 20 (Marks: 1) - Please choose one
The data for an ogive is found in which distribution?

- A relative frequency distribution
- A frequency distribution
- A joint frequency distribution
- **A cumulative frequency distribution (Page 43)**

FINAL TERM EXAMINATION
Fall 2009
STA301- Statistics and Probability

Question No: 1 (Marks: 1) - Please choose one
10! =.....

- 362880
- **3628800**
- 362280
- 362800

اس سے پہلے کہ تمہیں شہوت فتنے میں ڈالے نکاح کرلو

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Question No: 2 (Marks: 1) - Please choose one
When E is an impossible event, then P(E) is:

- 2
- **0 (Page 146) rep**
- 0.5
- 1

Question No: 3 (Marks: 1) - Please choose one
The value of χ^2 can never be :

- Zero
- Less than 1
- Greater than 1
- **Negative (Page 307) rep**

Question No: 4 (Marks: 1) - Please choose one
The curve of the F- distribution depends upon:

- **Degrees of freedom (Page 312)**
- Sample size
- Mean
- Variance

Question No: 5 (Marks: 1) - Please choose one
If X and Y are random variables, then $E(X-Y)$ is equal to:

- $E(X)+E(Y)$
- $E(X)-E(Y)$ **(Page 202) rep**
- $X-E(Y)$
- $E(X)-Y$

Question No: 23 (Marks: 1) - Please choose one

The sample mean $\bar{X} = \frac{\Sigma X}{n}$ is an unbiased estimator of population mean (μ), because:

- $E(\bar{X}) = 0$
- $E(\bar{X}) = \mu$ **(Page 259)**
- $E(\bar{X}) > \mu$
- $E(\bar{X}) < \mu$

Question No: 24 (Marks: 1) - Please choose one

For a particular hypothesis test, $\alpha = 0.05$ and $\beta = 0.10$. The power of test equals to:

- 0.95
- 0.25
- **0.90**
- 0.14

Question No: 25 (Marks: 1) - Please choose one

The degrees of freedom for a t-test with sample size 10 is:

- 5
- 8
- **9 (Page 298) rep**
- 10

Question No: 26 (Marks: 1) - Please choose one

The degrees of freedom for a t-test with sample size 14 is:

- 14
- **13 (Page 341) rep**
- 7
- 0

Question No: 27 (Marks: 1) - Please choose one

The degrees of freedom for a t-test with sample size 6 is:

- 1
- 3
- **5 (Page 341)**
- 7

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Question No: 28 (Marks: 1) - Please choose one

In testing of hypothesis, we always begin it with assuming that:

- **Null hypothesis is true (Page 277) rep**
- Alternative hypothesis is true
- Sample size is large
- Population is normal

Question No: 29 (Marks: 1) - Please choose one

If a continuous probability distribution has $\beta_2 = 2.14$ then what will be peakedness of the distribution?

- **Platykurtic (Page 119) rep**
- Mesokurtic
- Leptokutic
- Moderately skewed

Question No: 30 (Marks: 1) - Please choose one

The difference between statistic and parameter is called:

- **Bias** Click here for detail **rep**
- Standard error
- Sampling error
- None of above

Question No: 11 (Marks: 1) - Please choose one
Which one is the poor measure of dispersion in open-end distribution?

- **Range**
- Standard deviation
- Mean deviation
- Variance

Question No: 12 (Marks: 1) - Please choose one
Men tend to marry women who are slightly younger than themselves. Suppose that every man married a woman who was exactly 5 years younger than themselves. Which of the following is correct:

- The correlation is −5
- The correlation is 5
- **The correlation is 1** Click here for detail
- The correlation is 0

Question No: 13 (Marks: 1) - Please choose one
Sum of absolute deviations of the values is least when deviations are taken from:

- **Mean**
- Median
- Mode
- Geometric mean

Question No: 14 (Marks: 1) - Please choose one
Which of the following measures of central location is affected most by extreme values:

- Geometric Mean
- Median
- **Mean** Click here for detail
- Mode

Question No: 15 (Marks: 1) - Please choose one
Which of the following is a critical value of Z when $1-\alpha = 95\%$ for one tailed test:

- 2.58
- 1.645
- 1.25
- **1.96**

بہترین تجربہ وہ ہے جس سے نصیحت حاصل ہو

Question No: 6 (Marks: 1) - Please choose one
When c is a constant, then E(c) is:

- 0
- 1
- **c (Page 180) rep**
- -c

Question No: 7 (Marks: 1) - Please choose one
When the random variable X and Y are independent, its co-variance is:

- One
- Negative
- **Zero (Page 207)**
- Positive

Question No: 8 (Marks: 1) - Please choose one
When f (x, y) is bivariate probability density function of continuous r.v.'s X and Y, then

$$\int_{-\infty}^{\infty}\int_{-\infty}^{\infty} f(x,y)dx\,dy$$

is equal to:

- **1 (Page 199)**
- 0
- -1
- ∞

Question No: 9 (Marks: 1) - Please choose one
Which dispersion is calculated from all the observations?

- **Standard deviation**
- Quartile deviation
- Rang
- Coefficient of Rang

Question No: 10 (Marks: 1) - Please choose one
Standard deviation of the data 7, 7, 7, 7, 7, 7, 7 is

- 49
- Sqrt (7)
- **0 Standard deviation will always be zero if all the values in data are same**
- 7

Question No: 29 (Marks: 1) - Please choose one
A failing student is passed by an examiner is an example of:

- Type I error
- **Type II error**
- Correct decision
- No information regarding student exams

Question No: 30 (Marks: 1) - Please choose one
How to find $P(X+Y \le 1)$?

- f(0, 0) + f(0, 1) + f(1, 2)
- f(2, 0) + f(0, 1) + f(1, 0)
- f(0, 0) + f(1, 1) + f(1, 0)
- f(0, 0) + f(0, 1) + f(1, 0)

FINAL TERM EXAMINATION
Spring 2010
STA301- Statistics and Probability (Session - 3)

Question No: 1 (Marks: 1) - Please choose one
The total number of samples when sampling is done with replacement :

- N^n **(Page 237) rep**
- C_n^N
- $\frac{N-n}{N-1}$
-
- 1

عقل مند آدمی اس وقت تک نہیں بولتا جب تک خاموشی نہیں ہو جاتی

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Question No: 2 (Marks: 1) - Please choose one
The test statistic used in analysis of variance procedure follow the ..... distribution.:

- χ^2
- T
- Z
- **F (Page 326) rep**

Question No: 3 (Marks: 1) - Please choose one
If a random variable X denotes the number of heads when three distinct coins are tossed, the X assumed the values:

- **0,1,2,3 rep**
- 1,3,3,1
- 1, 2, 3
- 3, 2

Question No: 4 (Marks: 1) - Please choose one
If X and Y are independent variables, then E (XY) is:

- E(XX)
- **E(X).E(Y) (Page 202) rep**
- X.E(Y)
- Y.E(X)

Question No: 5 (Marks: 1) - Please choose one
$$S^2 = \frac{\sum(x-\bar{x})^2}{n}$$
The sample variance is:

- Unbiased estimator of σ^2
- **Biased estimator of σ^2 (Page 260) rep**
- Unbiased estimator of μ

Question No: 24 (Marks: 1) - Please choose one
Which one of the following statements is true regarding a population?

- **It must be a large number of values (Page 12)**
- It must refer to people
- It is a collection of individuals, objects, or measurements
- It is small part of whole

Question No: 25 (Marks: 1) - Please choose one
When $Q_1 = 2$ *and* $Q_3 = 4$,what is the value of Median, if the distribution is symmetrical:

- 1
- 2
- 3
- 4

Question No: 26 (Marks: 1) - Please choose one
In a simple linear regression model, if it is assumed that the intercept parameter is equal to zero, then:

- The regression line will pass through the origin
- The regression line will pass through the point (0,10).
- The regression line will pass through the point (0,-10).
- **The slope of the line will also be equal to 0.**

Question No: 27 (Marks: 1) - Please choose one
The degrees of freedom for a t-test with sample size 10 is:

- 5
- 8
- **9 (Page 298) rep**
- 10

Question No: 28 (Marks: 1) - Please choose one
In testing of hypothesis, we always begin it with assuming that:

- **Null hypothesis is true (Page 277) rep**
- Alternative hypothesis is true
- Sample size is large
- Population is normal

بد صورت چہرہ بد صورت دماغ سے بہتر ہے

Question No: 19 (Marks: 1) - Please choose one
The branch of Statistics that is concerned with the procedures and methodology for obtaining valid conclusions is called:

- ► Descriptive Statistics
- ► Advance Statistics
- ► **Inferential Statistics (Page 237)**
- ► Sampled Statistics

Question No: 20 (Marks: 1) - Please choose one
Which of the following is a systematic arrangement of data into rows and columns?

- ► Classification
- ► **Tabulation**
- ► Bar chart
- ► Component bar chart

Question No: 21 (Marks: 1) - Please choose one
In normal distribution Q.D =

- ► 0.5σ
- ► 0.75σ
- ► 0.7979σ
- ► 0.6745σ Click here for detail

Question No: 22 (Marks: 1) - Please choose one
In normal distribution $\beta_2 =$

- ► 1
- ► 2
- ► **3 (Page 119)**
- ► 0

Question No: 23 (Marks: 1) - Please choose one
If you connect the mid-points of rectangles in a histogram by a series of lines that also touches the x-axis from both ends, what will you get?

- ► Ogive
- ► Frequency polygon
- ► **Frequency curve (Page 38)**
- ► Historigram

Question No: 15 (Marks: 1) - Please choose one
If f (x, y) is bivariate probability density function of continuous r.v.'s X and Y then

$g(x)$ is:

- $\int_{-\infty}^{\infty} f(x,y)\,dx$
- $\int_{-\infty}^{\infty} f(x,y)\,dy$
- $\int_{-\infty}^{\infty}\int_{-\infty}^{\infty} f(x,y)\,dx\,dy$ **(Page 199)**
- $\int_{a}^{b}\int_{c}^{d} f(x,y)\,dy\,dx$

Question No: 16 (Marks: 1) - Please choose one
The analysis of variance technique is a method for :

- Comparing F distributions
- **Comparing three or more means (Page 320)**
- Measuring sampling error
- Comparing variances

Question No: 17 (Marks: 1) - Please choose one
The continuity correction factor is used when:

- The sample size is at least 5
- Both *nP* and *n (1-P)* are at least 30
- **A continuous distribution is used to approximate a discrete distribution** Click here for detail
- The standard normal distribution is applied

Question No: 18 (Marks: 1) - Please choose one
Stem and leaf is more informative when data is :

- Equal to 100
- Greater Than 100
- **Less than 100** click here for detail
- In all situations

Question No: 11 (Marks: 1) - Please choose one

An estimator T is said to be unbiased estimator of θ if

- ► E (T) = θ **(Page 258) rep**
- ► E (T) =T
- ► E (T) =0
- ► E (T) =1

Question No: 12 (Marks: 1) - Please choose one

The best unbiased estimator for population variance σ^2 is:

- ► **Sample mean (Page 260) rep**
- ► Sample median
- ► Sample proportion
- ► Sample variance

Question No: 13 (Marks: 1) - Please choose one

$$S^2 = \frac{\sum(x-\bar{x})^2}{n}$$

The sample variance is:

- ► Unbiased estimator of σ^2
- ► **Biased estimator of σ^2 (Page 260)**
- ► Unbiased estimator of μ
- ► None of these

Question No: 14 (Marks: 1) - Please choose one

When c is a constant, then E(c) is:

- ► 0
- ► 1
- ► **c (Page 180) rep**
- ► -c

عقل مند اپنے عیب خود دیکھتا ہے اور بیوقوفوں کے عیب دنیا دیکھتی ہے

Question No: 20 (Marks: 1) - Please choose one

$\sum_{i=1}^{5}(X_i - 20) = 0, then\ \bar{X} = ...$

If

- ► **0 (Page 258)**
- ► 20
- ► 5
- ► 25

Question No: 21 (Marks: 1) - Please choose one

The height of a student is 60 inches. This is an example of .....?

- ► Continuous data
- ► Qualitative data
- ► Categorical data
- ► **Discrete data**

Question No: 22 (Marks: 1) - Please choose one

In Statistics, we have MSE which is abbreviation of.....

- ► **Mean square error (Page 330)**
- ► Measured square error
- ► Medical screening exam
- ► Major sampling error

Question No: 23 (Marks: 1) - Please choose one

Which one is the formula of mid range:

- ► $x_m - x_0$
- ► $x_0 - x_m$
- ► $\frac{x_0 - x_m}{2}$
- ► $\frac{x_0 + x_m}{2}$ **(Page 80)**

عقل مند کہتا ہے میں کچھ نہیں جانتا جبکہ بے وقوف کہتا ہے کہ میں سب کچھ جانتا ہوں

Question No: 15 (Marks: 1) - Please choose one
Var(4X + 5) =_____

- 16 Var (X)
- 16 Var (X) + 5
- **4 Var (X) + 5**
- 12 Var (X)

Question No: 16 (Marks: 1) - Please choose one
When f(x) is continuous probability function, then P(X = 1) is:

- 1
- ∞
- −∞
- **0 (Page 188)**

Question No: 17 (Marks: 1) - Please choose one
The hyper geometric random variable is a(an):

- Continuous variable
- **Discrete variable** Click here for detail
- Undefined
- Independent variable

Question No: 18 (Marks: 1) - Please choose one
From a sample of 200 people were asked whether they like a particular product. Fifty said 'yes' and remain said 'no', assuming 'yes' means a success, which of the following is correct?

- Sample proportion p=0.33
- **Sample proportion p=0.25 (Page 245)**
- Population proportion p= 0.33
- Population proportion p=0.25

Question No: 19 (Marks: 1) - Please choose one
In any data set, what percent of values fall in the interval $Median \pm Q.D$?

- **50 per cent (Page 84)**
- 68.5 per cent
- 95.4 per cent
- 99 per cent

Question No: 3 (Marks: 1) - Please choose one
The LSD test is applied only if the null hypothesis is:

- **Rejected (Page 331)**
- Accepted
- No conclusion
- Acknowledged

Question No: 4 (Marks: 1) - Please choose one
Analysis of variance is a procedure that enables us to test the equality of several:

- Variances
- **Means (Page 320)**
- Proportions
- Groups

Question No: 5 (Marks: 1) - Please choose one
ANOVA was introduced by :

- Helmert
- Pearson
- **R.A Fisher (Page 320) rep**
- Francis

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Question No: 6 (Marks: 1) - Please choose one
For testing of hypothesis about population proportion , we use:

- **Z-test (Page 292) rep**
- t-Test
- Both Z & T-test
- F test

Question No: 7 (Marks: 1) - Please choose one
If a random variable X denotes the number of heads when three distinct coins are tossed, the X assumed the values:

- **0,1,2,3**
- 1,3,3,1
- 1, 2, 3
- 3, 2

Question No: 8 (Marks: 1) - Please choose one
If X and Y are independent variables, then E (XY) is:

- E(XX)
- **E(X).E(Y) (Page 202)**
- X.E(Y)
- Y.E(X)

Question No: 9 (Marks: 1) - Please choose one
The parameters of the binomial distribution b(x; n, p) are:

- x & n
- **x & p (Page 212) rep**
- n & p
- x, n & p

Question No: 10 (Marks: 1) - Please choose one
If P (E) is the probability that an event will occur, which of the following must be false:

- **P(E)= - 1**
- P(E)=1
- P(E)=1/2
- P(E)=1/3

جو لوگوں کے سامنے فخر کرتا ہے وہ لوگوں کی نظروں سے گر جاتا ہے

Question No: 29 (Marks: 1) - Please choose one

Variance of the t-distribution is given by the formula:

$$\sigma^2 = \sqrt{\frac{\nu}{\nu-2}}$$

- $$\sigma^2 = \frac{\nu^2}{\nu-2}$$
- $$\sigma^2 = \frac{\nu}{\nu-1}$$
- $$\sigma^2 = \frac{\nu}{\nu-2}$$ **(Page 293)**
-

Question No: 30 (Marks: 1) - Please choose one

If a continuous probability distribution has $\beta_2 = 2.14$ then what will be peakedness of the distribution?

- **Platykurtic (Page 119)**
- Mesokurtic
- Leptokutic
- Moderately skewed

FINAL TERM EXAMINATION
Spring 2010
STA301- Statistics and Probability (Session - 4)

Question No: 1 (Marks: 1) - Please choose one

When each outcome of a sample space has equal chance to occur as any other, the outcomes are called:

- Mutually exclusive
- **Equally likely (Page 117)**
- Not mutually exclusive
- Exhaustive

جو شخص ناکامیوں سے ڈر کر بھاگتا ہے کامیابی اس سے ڈر کر بھاگتی ہے

Question No: 24 (Marks: 1) - Please choose one
The deviation of a distribution from symmetry is called:

- ► Kurtosis
- ► **Skewness**
- ► Dispersion
- ► Flatness

Question No: 25 (Marks: 1) - Please choose one
If E is an impossible event, then P(E) is:

- ► 1
- ► 2
- ► **0 (Page 146)**
- ► 0.5

Question No: 26 (Marks: 1) - Please choose one
If a data set has the even number of observations, the median :

- ► Is the average value of the two middle items
- ► Can not be determined
- ► must be equal to the mean
- ► **Is the average value of the two middle items when all items are arranged in ascending order**

Click here for detail

Question No: 27 (Marks: 1) - Please choose one
For the Poisson distribution $P(X=1)=\frac{e^{-0.135}0.135^1}{1!}$ the mean value is :

- ► 2
- ► 5
- ► 10
- ► **0.135 (Page 222)**

Question No: 28 (Marks: 1) - Please choose one
In testing of hypothesis, we always begin it with assuming that:

- ► **Null hypothesis is true (Page 277)**
- ► Alternative hypothesis is true
- ► Sample size is large
- ► Population is normal

Question No: 10 (Marks: 1) - Please choose one

The probability of drawing a king of spade from a pack of 52 cards is:

- 1/4
- 1/13
- 1/26
- **1/52**

Question No: 11 (Marks: 1) - Please choose one

An estimator T is said to be unbiased estimator of θ if

- **E (T) = θ (Page 258)**
- E (T) =T
- E (T) =0
- E (T) =1

Question No: 12 (Marks: 1) - Please choose one

From point estimation, we always get:

- **Single value (Page 257)**
- Two values
- Range of values
- Zero

Question No: 13 (Marks: 1) - Please choose one

The best unbiased estimator for population variance σ^2 is:

- Sample mean
- Sample median
- Sample proportion
- **Sample variance (Page 260)**

Question No: 14 (Marks: 1) - Please choose one

When c is a constant, then E(c) is:

- 0
- 1
- **c (Page 180)**
- -c

دنیا کی سب سے بڑی فتح نفس پر قابو رکھنا ہے

Question No: 5 (Marks: 1) - Please choose one
ANOVA was introduced by :

- Helmert
- Pearson
- **R.A Fisher (Page 320)**
- Francis

Question No: 6 (Marks: 1) - Please choose one
The test statistic used in analysis of variance procedure follow the ..... distribution.:

- χ^2
- T
- Z
- **F (Page 326)**

Question No: 7 (Marks: 1) - Please choose one
For testing of hypothesis about population proportion , we use:

- **Z-test (Page 292)**
- t-Test
- Both Z & T-test
- F test

Question No: 8 (Marks: 1) - Please choose one
If X and Y are random variables, then $E(X-Y)$ is equal to:

- $E(X)+E(Y)$
- $E(X)-E(Y)$ **(Page 202) rep**
- $X-E(Y)$
- $E(X)-Y$

Question No: 9 (Marks: 1) - Please choose one
A die is rolled. What is the probability that the number rolled is greater than 2 and even:

- 1/2
- 1/3
- **2/3 4/6 = 2/3**
- 5/6

Question No: 6 (Marks: 1) - Please choose one
Which of the falling is true for the binomial distribution b(x: n, p):
► **Mean > Variance (Page 214)**
► Mean < Variance
► Mean = Variance
► Mean = Standard Deviation

Question No: 7 (Marks: 1) - Please choose one
What is *m f* in the formula of mode?
► first frequency
► last frequency
► middle frequency
► **highest frequency (Page 54)**

FINAL TERM EXAMINATION
Fall 2011
STA301- Statistics and Probability

Question No: 1 (Marks: 1) - Please choose one
The parameters of the binomial distribution b(x; n, p) are:

► x & n
► x & p
► **n & p (Page 212)**
► x, n & p

Question No: 2 (Marks: 1) - Please choose one
Which of the following is true for the Poisson distribution:

► mean > variance
► mean < variance
► **mean = variance (Page 223)**
► mean= standard deviation

اللہ کا خوف سب سے بڑی دانائی ہے

Question No: 1 (Marks: 1) - Please choose one
The t-Distribution is..... Spread out then the standard normal Distribution.
► Less
►**More (Page 293)**
►Equally
►Not

Question No: 2 (Marks: 1) - Please choose one
To find the confidence internal for the ratio of two variances we use:
►**F-Distribution (Page 311)**
►Z-Distribution
►Chi-Square Distribution
►T-Distribution

Question No: 3 (Marks: 1) - Please choose one
How many percent of values are less then 4th deciles in a symmetric distribution.
►14
►24
►4
►**40 (Page 70)**

Question No: 4 (Marks: 1) - Please choose one
The combined distribution of more than two random variables is:
►Bivariate Distribution
►Marginal Distribution
►**Joint Distribution (Page 194)**
►Univariate Distribution

Question No: 5 (Marks: 1) - Please choose one
The degrees of freedom for a T-test with sample size 14 is:
►14
►**13 (Page 341)**
►**7**
►0

بری صحبت سے تنہائی بہتر ہے اور تنہائی سے نیک صحبت بہتر ہے

142. How to find the class midpoint?

Select correct option:

Half the sum of upper class limit and lower class limit

Find the difference between consecutive lower limits

Count the number of observations in the class

143. For given data, discuss the shape of the distribution: X f 0.2 8 1.2 15 2.2 23 3.2 40 Select correct option:

Positively skewed

Negatively skewed

Symmetric curve U-Shaped curve

144. Data classified by attributes are called: Select correct option:

group

qualitative

quantitativ

array

7. The data for an ogive is found in which distribution:

Select correct option:

A cumulative frequency distribution

A joint frequency distribution

A frequency distribution

A relative frequency distribution

8. Which one of the following is greater than median for a symmetrical distribution: Select correct option:

1st Decile

7th Decile

44th Percentile

143. For given data, discuss the shape of the distribution: X f 0.2 8 1.2 15 2.2 23 3.2 40 Select correct option:

Positively skewed

Negatively skewed

Symmetric curve U-Shaped curve

144. Data classified by attributes are called: Select correct option:

group

qualitative

quantitativ

array

41. In the FA examination, 24candidates offered Statistics. If the probability of passing the subject be 1/3, what will be the mean of the distribution? Select correct option:

7

$n=24,\ p=1/3,\ \text{mean}=np=24*1/3=8$

8

6

5

37. The function abbreviated to d.f. is also called the. Select correct option:

Probability density function

Probability distribution function pg 172 Commutative distribution function

Discrete function

38. Binomial distribution is skewed to the right if: Select correct option: p=

q

p

35. A random variable X has a probability distribution as follows: X | 0 1 2 3 P(X) | 2k 3k 13k 2k What is the possible value of k: Select correct option:

0.0

1

$$2k+3k+13k+2k=1$$
$$20k=1$$
$$k=\frac{1}{20}=0.05$$

0.0

3

0.05

0.07

30. If P (A) = 0.3 and P (B) = 0.5, find P (A/B) where 'A' and 'B' are independent: Select correct option:

0.3

$$P(A/B)=\frac{P(A\cap B)}{P(B)}$$
$$=\frac{P(A).P(B)}{P(B)}=\frac{(0.3)(0.5)}{0.5}=0.3$$

0

.

3

0

.

134. What we commonly called a bell shaped distribution: Select correct option:

symmetrical

bi moder u

shap skewed

135. The beginnings of a cumulative frequency distribution are pre

138. The value of the middle term in a ranked (ordered) data set is called the Select correct option:

mode

mean

median

harmonic mean

143. For given data, discuss the shape of the distribution: X f 0.2 8 1.2 15 2.2 23 3.2 40 Select correct option:

Positively skewed

Negatively skewed

Symmetric curve U-Shaped curve

144. Data classified by attributes are called: Select correct option:

group

qualitative

quantitativ

array

14th Percentile

Statistics deals with Select correct option: Individuals

Isolated items

Isolated items

Aggregates of facts

Data classified by attributes are called: Select correct option:

48. use the division of a circle into different sectors. Select correct option:

Line graph
Sector
graphs
Frequency Polygon

41. In the FA examination, 24candidates offered Statistics. If the probability of passing the subject be 1/3, what will be the mean of the distribution? Select correct option:

7

n=24, p=1/3, mean=np=24*1/3=8

8

6

5

38. Binomial distribution is skewed to the right if: Select correct

option: p=
q
P<
q
p>
q
p=
n

39. A discrete probability function f(x) is always: Select correct

option: Zero
One pg

36. The probability of drawing any one spade card is: Select correct option:

1/52
4/52
13/52
52/52

41. In the FA examination, 24candidates offered Statistics. If the probability of passing the subject be 1/3, what will be the mean of the distribution? Select correct option:

7

n=24, p=1/3, mean=np=24*1/3=8

8

6

5

55. In the central tendency Mean, Median and Mode

Select correct option:

Mean is better than Median

Median is better than Mode

Mean is better than Mode

All of these are true

56. The degree to which numerical data tend to spread about an average is called Select correct option:

The dispersion

Standard deviation

Correlation

48. use the division of a circle into different sectors. Select correct option:

Line graph

Sector graphs

Frequency Polygon

43. Probability of type II error is

Select correct option:

a

B (beta) pg 276

1-a

48. use the division of a circle into different sectors. Select correct option:

Line graph

Sector graphs

Frequency Polygon

75. If the dependent variable increases with the independent variable then the coefficient of correlation is

Select correct option:

0 to -1

0 to – 0.5

0 to -2

0 to 1

76. F- distribution tends to normality, if

Select correct option:

V1~8

V2~8

V1 and V2 ~8

---

71. Sum of three terms whose mean is equal to 90 is

Select correct option:

270

30

Also 90

None of these

270/3=90

72. FREQUENCY Function calculates how often values occur within a range of values.

Select correct option:

true

67. F-distribution is a.....distribution.

Select correct option:

Unimodel pg 312

Bimodal

Discrete

Negatively skewed

66. With increase in sample size, distribution tends to be a.....

Select correct option:

Meso kurtic

Normal

Bell shaped

Above all

65. How many numbers of parameter(s) are in t-distribution?

Select correct option:

0

1 pg 292

2

99. When we want to test the equality of two variances we usually use

F-test

Chi-square test

ANOVA

Z_test

100. To find the estimate of a parameter .....methods are used.

Two

Three

Four

Many

92. The critical region is in:

The middle of a distribution

The tails of a distribution

Either the middle or the tails of a distribution

Neither the middle nor the tails of a distribution

93. T-distribution is used to test the hypothesis about.....

Mean

Proportion

The term 1-B is called

Level of the test

Power of the test

Size of the test

Critical region

94. The asymptotic distribution of t-statistic with n-degree of freedom is

F

Normal

Z

T

7

91. When testing for independence in a contingency table with 2 rows and 5 columns, there are _____degrees of freedom.

4

10

7

5

1*

$(r-1)(c-1) = (2-1)(5-1) = 4$

82. If we reject the null hypothesis, we might be making

Select correct option:

Type I error

Type II error

A correct decision

Unpredictable

81. In a t-distribution

Select correct option:

Mean=median=mode

Mean>Median<Mode

76. F- distribution tends to normality, if

Select correct option:

V1~8

V2~8

V1 and V2 ~8

Sample size is large

75. If the dependent variable increases with the independent variable then the coefficient of correlation is

Select correct option:

0 to -1

0 to – 0.5

0 to -2

0 to 1

76. F- distribution tends to normality, if

Select correct option:

V1~8

V2~8

V1 and V2 ~8

Neither the middle nor the tails of a distribution

90. How many steps are involved in general procedure for testing hypothesis:

4

5

6 Formulation, Level of Significance, Test Statistic, Critical Region, Calculation, Conclusion

87. If the graph is very much scattered, then what can be the suitable value of r? Select correct option:

r = - 0.9

r =-0.5

r=0.1

r=0.8

88. In scatter diagram, clustering of points around a straight line indicates Select correct option:

Linear regression

Non-linear regression

Curvilinear linear regression

Both a and b

86. If the median of an arrangement of numbers is equal to the mean of its middle terms then the arrangement contains Select correct option:

Odd number of terms

Even number of terms

unlimited number of terms

Prime number

82. If we reject the null hypothesis, we might be making

Select correct option:

Type I error

Type II error

A correct decision

Unpredictable

107. ML estimators may not .....

Consiste
nt
Efficient
Unbiased

Bised

108. Which of the following reveals the weakest fact.
Select correct option:

The measure of central tendency measures that value which depends only on the extreme values

102. t-distribtion is applicable in case of

Independent samples

Dependent samples

Both (a) and (b)

Normal

populations

103. When testing for independence in a contingency table with 3 rows and 4 columns, there are
_____Degrees of freedom.

5

6 $(r-1)(c-1)=(3-1)(4-1)=6$

7

12

104. The Chi- Square distribution is continuous distribution ranging from:
0 =?2= 8

-8 =?2 =0 -8 =?2 =1 $0 \leq \chi^2 \leq \infty$

99. When we want to test the equality of two variances we usually use
F-test

Chi-square test

ANOVA

Z_test

100. To find the estimate of a parameter .....methods are used.
Two
Three
Four

Many

65. How many numbers of parameter(s) are in t-distribution?

Select correct option:

0

1 pg 292

2

3

8. A pattern of variation of a time series that repeats every year is called:

Select correct option:

Cyclical

Season

al Trend

Secular

9. In the central tendency Mean, Median and Mode

Select correct option:

Mean is better than Median

Median is better than Mode

Mean is better than Mode

56. The degree to which numerical data tend to spread about an average is called Select correct option:

The dispersion

Standard deviation

Correlation

None of these

57. graphs are similar to bar graphs.

Select correct option:

column

55. In the central tendency Mean, Median and Mode

Select correct option:

Mean is better than Median

Median is better than Mode

Mean is better than Mode

All of these are true

56. The degree to which numerical data tend to spread about an average is called Select correct option:

The dispersion

Standard deviation

Correlation

115. 1-a is the probability of .1.....

Type 1 error

Rejection region

Acceptance region

Type 2 error

116. Inferential statistics involves.....

Testing

Confidence interval

Estimation

Above all

117. Probability of type II error

is a B(beta)

1-a

1-B

112. Which one provides the basis for hypothesis testing?

Null hypothesis

110. A bar graph uses .....to show data.

Select correct option:

Points

Bars

Lines

Pictures

107. ML estimators may not .....

Consiste
nt

Efficient

Unbiased

Bised

125. A histogram is consists of a set of adjacent rectangles whose bases are marked off by: Select correct option:

Class boundaries
Class limits
Class frequency
Class marks

Greater than zero
Less than one
Equal to one
Greater than one

121. Alpha is the probability of ....Select correct option:

Rejecting H0
Accepting H0
Rejecting H1
Accepting H1

122. What type of data is collected in population census?
Select correct option:

Two Types

123. The collection of all outcomes for an experiment is called
Select correct option:

a sample space

The line passes through origin. The line passes through (5, 0) The line is parallel to y-axis.

The line is parallel to x-axis.

119. If the estimating equation is Y = a – b X ,Which of the following is true
Select correct option:

a) The y intercept is 'b'
b) Slope of line is negative
c) There is inverse relationship
d) b & c

120. The variance of t-distribution, for v >2, is always:
Select correct option:

Greater than zero
Less than one
Equal to one
Greater than one

The simultaneous occurrence of two events is called:

Select correct option:

Joint probability

Subjective probability

Prior probability

Conditional probability

129. If the both tails of the distribution are equal, then distribution is called: Select correct option: J-shaped

Symmetrical

Positively Skewed

Negatively Skewed

130. Ranking scale also include the properties of which scale?

Select correct option:

Nominal scale

Interval scale

Ratio scale

All of these

131. Range of the values -2.50,-3.70,-4.80,-3.10,-9.70,-2.20,-8.90,-1.60, 0.60 is Select correct option: 10.03

10.30

). Which formula represents the probability of the complement of event A: Select correct option: 1 + P (A)

1 - P
(A)
P
(A)

166. The simultaneous occurrence of two events is called:

Select correct option:

Joint probability

Subjective probability

Prior probability

Conditional probability

The simultaneous occurrence of two events is called:

elect correct option:

oint probability

ubjective probability

rior probability

onditional probability

129. If the both tails of the distribution are equal, then distribution is called: Select correct option: J-shaped

Symmetrical

Positively Skewed

126. The value that has half of the observations above it and half the observations below it is known as:

Select correct option:

Mean

Median

Mode

Standard deviation

127. The height of a student is 60 inches. This is an example of ?

Select correct option:

Continuous data

Qualitative data

Categorical data

Discrete data

124. Which of the graph is used for a time series data:

Select correct option:

Frequency curve

Frequency polygon

Historigram

Histogram

125. A histogram is consists of a set of adjacent rectangles whose bases are marked off by: Select correct option:

Class boundaries

Class limits

Class frequency

Class marks

Greater than zero

Less than one

Equal to one

Greater than one

121. Alpha is the probability of ....Select correct option:

Rejecting H0

Accepting H0

Rejecting H1

Accepting H1

55. In a multiplication theorem P (A n B) equals:

Select correct option:

1. P (A) P (B) agr independent events hon tau (1) correct hai

Agr not independent (dependent) events hon tau (3) correct

2. P (A) + P (B)

29-32 / 78

3. P (A)* P (B|A) pg. 158
4. P(B\A)*P(B)

56. If Y=3X+5,then S.D of Y is equal to

Select correct option:

9

s.d(x) 3 s.d(x)

S.D(Y) =3S.D(X)

s.d(x)+5

Question No: 4 (Marks: 1) - Please choose one

In chi-square test of independence the degrees of freedom are:

- ► n - p
- ► n - p-1
- ► n - p- 2
- ► n – 2

Question No: 5 (Marks: 1) - Please choose one

The Chi- Square distribution is continuous distribution ranging from:

- ► $-\infty \leq \chi 2 \leq \infty$
- ► $-\infty \leq \chi 2 \leq 1$
- ► $-\infty \leq \chi 2 \leq 0$
- ► $0 \leq \chi 2 \leq \infty$ **(Page 307)**

Question No: 6 (Marks: 1) - Please choose one

If X and Y are random variables, then $E(X-Y)$ is equal to:

- ► $E(X)+E(Y)$
- ► $E(X)-E(Y)$ **(Page 202)**
- ► $X-E(Y)$
- ► $E(X)-Y$

56. If Y=3X+5,then S.D of Y is equal to

Select correct option:

9

s.d(S.D(Y) =3S.D(X)

x) 3

s.d(

x)

s.d(x)+5

3s.d(x)+5

57. In regression line Y=a+bX, X is called: Select c

option: Dependent variable

Independent

variable Explained

variable Regressand

58. Symbolically, a marginal probability is:

Select correct option:

P(AB)

P(AUB)

P(A/B)

P(A)

9. Statistics deals with Select correct option: Individuals

Isolated items

Isolated items

Aggregates of facts

0. Data classified by attributes are called: Select correct option:

Grouped data

Qualitative data

Quantitative data

Question No: 1 (Marks: 1) - Please choose one
For a particular data the value of Pearson's coefficient of skewness is greater then zero. What will be the shape of distribution?

- Negatively skewed
- J-shaped
- Symmetrical
- **Positively skewed (Page 109)**

Question No: 2 (Marks: 1) - Please choose one
In measures of relative dispersion unit of measurement is:

- Changed
- **Vanish**
- Does not changed
- Dependent

Question No: 3 (Marks: 1) - Please choose one
The F-distribution always ranges from:

- 0 to 1
- 0 to -∞
- -∞ to +∞
- **0 to +∞ (Page 312)**

دنیا میں سب سے مشکل کام اپنی اصلاح اور سب سے آسان کام دوسروں پر نکتہ چینی کرنا ہے

Question No: 1 (Marks: 1) - Please choose one
The parameters of the binomial distribution b(x; n, p) are:

- x & n
- x & p
- **n & p (Page 212)**
- x, n & p

Question No: 2 (Marks: 1) - Please choose one
Which of the following is true for the Poisson distribution:

- mean > variance
- mean < variance
- **mean = variance (Page 223)**
- mean= standard deviation

Question No: 2 (Marks: 1) - Please choose one
To find the confidence internal for the ratio of two variances we use:
- **F-Distribution (Page 311)**
- Z-Distribution
- Chi-Square Distribution
- T-Distribution

Question No: 3 (Marks: 1) - Please choose one
How many percent of values are less then 4th deciles in a symmetric distribution.
- 14
- 24
- 4
- **40 (Page 70)**

Question No: 4 (Marks: 1) - Please choose one
The combined distribution of more than two random variables is:
- Bivariate Distribution
- Marginal Distribution
- **Joint Distribution (Page 194)**
- Univariate Distribution

Question No: 5 (Marks: 1) - Please choose one
The degrees of freedom for a T-test with sample size 14 is:
- 14
- **13 (Page 341)**
- **7**
- 0

Question No: 5 (Marks: 1) - Please choose one
ANOVA was introduced by :

- Helmert
- Pearson
- **R.A Fisher (Page 320)**
- Francis

Question No: 6 (Marks: 1) - Please choose one
The test statistic used in analysis of variance procedure follow the ..... distribution.:

- χ^2
- T
- Z
- **F (Page 326)**

Question No: 7 (Marks: 1) - Please choose one
For testing of hypothesis about population proportion , we use:

- **Z-test (Page 292)**
- t-Test
- Both Z & T-test
- F test

Question No: 8 (Marks: 1) - Please choose one
If X and Y are random variables, then $E(X-Y)$ is equal to:

- $E(X)+E(Y)$
- $E(X)-E(Y)$ **(Page 202) rep**
- $X-E(Y)$
- $E(X)-Y$

Question No: 3 (Marks: 1) - Please choose one
The F-distribution always ranges from:

- 0 to 1
- 0 to -∞
- -∞ to +∞
- **0 to +∞ (Page 312) rep**

Question No: 4 (Marks: 1) - Please choose one
The total number of samples when sampling is done with replacement :

- N^n **(Page 237)**
- C_n^N
- $\frac{N-n}{N-1}$
- 1

Question No: 29 (Marks: 1) - Please choose one
A failing student is passed by an examiner is an example of:

- Type I error
- **Type II error**
- Correct decision
- No information regarding student exams

uestion No: 22 (Marks: 1) - Please choose one
normal distribution $\beta_2 =$

- 1
- 2
- 3 **(Page 119)**
- 0

Question No: 7 (Marks: 1) - Please choose one
If a random variable X denotes the number of heads when three distinct coins are tossed, the X assumed the values:

- **0,1,2,3**
- 1,3,3,1
- 1, 2, 3
- 3, 2

Question No: 8 (Marks: 1) - Please choose one
If X and Y are independent variables, then E (XY) is:

- E(XX)
- **E(X).E(Y) (Page 202)**
- X.E(Y)
- Y.E(X)

Question No: 9 (Marks: 1) - Please choose one
The parameters of the binomial distribution b(x; n, p) are:

- x & n
- **x & p (Page 212) rep**
- n & p
- x, n & p

Question No: 10 (Marks: 1) - Please choose one
If P (E) is the probability that an event will occur, which of the following must be false:

- **P(E)= - 1**
- P(E)=1

estion No: 29 (Marks: 1) - Please choose one
iance of the t-distribution is given by the formula:

- $\sigma^2 = \sqrt{\frac{\nu}{\nu-2}}$
- $\sigma^2 = \frac{\nu^2}{\nu-2}$
- $\sigma^2 = \frac{\nu}{\nu-1}$
- $\sigma^2 = \frac{\nu}{\nu-2}$ **(Page 293)**
-

The probability of drawing any one spade card is:
1/52
4/52
13/52
52/52

Question # 9 of 10 (Total Marks: 1) Select correct option:
The conditional probability P (A\B) is:

P(A n B)/P(B) (Page 159)
P(A n B)/P(A)
P(A U B)/P(B)
P(A U B)/P(A)

The Probabilities of the various values of the sample satistic can be computed using the..... definition of probability.

Subjective
Objective
Classical (Page 149)
None of the baove

Question # 9 of 10 (Total Marks: 1) Select correct option:
E(10X +3) =_____

10 E(X)
E(X)+3
10 E(X)+3
100E(X)

The probability of success changes from trial to trial, is the property of:

Binomial experiment (Page 211)
Hypergeometric experiment
Both binomial & hypergeometric experiment
Poisson experiment

Question # 5 of 10 (Total Marks: 1) Select correct option:
If a statistic used as an estimator, has its expected value equal to the true value of the population parameter being estimated then it is called.....

Consistent
Unbiased (Page 258)
Efficient
Sufficient

A probability density function 'f(x)' has the following property:

$f(x) <= 0$
$f(x) < 0$
$f(x) > 0$ (Page 186)
$f(x) >= 0$

Question # 10 of 10 (Total Marks: 1) Select correct option:
For a continuous random variable X, P(X = x) is:

Question # 2 of 10 (Total Marks: 1) Select correct option:
The location and shape of the normal curve is (are) determined by:

Mean
Variance
Mean & variance
Mean & standard deviation click here for detail

Question # 4 of 10 (Total Marks: 1) Select correct option:
A fair coin is tossed three times, the probability that at least one head appears,

1/8
7/8 (HHH,HHT,HTH, HTT, THH THT TTH TTT)
3/8
5/8

Question # 5 of 10 (Total Marks: 1) Select correct option:
In probability distribution, the sum of probabilities is equals to

0
0.1
0.5
1 click here for detail

Question # 6 of 10 (Total Marks: 1) Select correct option:
When a coin is tossed 3 times, the probability of getting 3 tails is

1/8 (HHH,HHT,HTH, HTT, THH THT TTH TTT)
3/8
3/6
2/8

set which is the sub-set of every set is

Empty Set (Page 134)
Power Set
Universal Set
Super Set

Question # 10 of 10 (Total Marks: 1) Select correct option:
When two dice are rolled the number of possible sample points is :

6
12
24
36 (Page 145)

Question # 1 of 10 (Total Marks: 1) Select correct option:
If two events A and B are not mutually exclusive then

P (A or B) = P (A) + P (B) – P (A and B) (Page 157)
P (A or B) = P (A) + P (B)
P (A or B) = P (A) x P (B)
P (A or B) = P (A) + P (B)

If two events A and B are not mutually exclusive then

P (A or B) = P (A) + P (B) – P (A and B) (Page 157)
P (A or B) = P (A) + P (B)
P (A or B) = P (A) x P (B)
P (A or B) = P (A) + P (B)

The classical definition of probability assumes:

Exhaustive events
Mutually exclusive events
Equally likely evens (Page 151)
Independent evens

Question # 2 of 10 (Total Marks: 1) Select correct option:
In scatter diagram, the variable plotted along Y-axis is:
Independent variable
Dependent variable
Continuous variable
Discrete variable

The total area under the normal curve is:

0
1 (Page 186)
0.5
0.75

Question # 7 of 10 (Total Marks: 1) Select correct option:
Two events A & B are said to be independent if....

P (A) + P (B)
P (B\A) = P (B)
P (A) * P (B) (Page 162) rep
P (A\B) = P (A)

The range of the binomial distribution is:
0, 1, 2, ... , 100
0, 1, 2, ... , n Click here for detail
0, 1, 2, ... , x
1, 2, ... , n

Q No 33

Explain Chi-Square method?

The chi-square distribution contains only one parameter, called the number of degree of freedom (df), where the term d.f represents the number of independent random variable that expresses the chi-square.

$$\chi^2 = \sum_{i=1}^{n} \frac{(|o-e|-e)^2}{e}$$

Q.No30 The department claims that the exceeds Rs. 2500 at the 0.05 level of, then formulate null alternative hypothesis?

Formulation:

$H_0 : \mu < 2500$

$H_1 : \mu > 2500$

Q.No31 When expected frequency in any category is less than 5 what we use?

If an expected frequency in any category is less than 5, then we use Yate' correction of continuity

$$\chi^2 = \sum_{i=1}^{2} \frac{(|O-E| - \frac{1}{2})^2}{E}$$

it is applied in

it is applied in the normal approximations to the binomial distribution.

Q.No 28 If $TSS = 272.25$

$\sum_i \sum_j x^2 = 4953$

Find (C.F) ~~Coefficient~~ correction factor -

we know that

$$TSS = \sum_i \sum_j x_{ij}^2 - C.F$$

$$272.25 = 4953 - C.F$$

$$C.F = 4953 - 272.25$$

$$C.F = 4680.75$$

Q.No 29 what is relation b/w mean and variance in poisson distribution

The mean and variance in the poisson distribution are same i.e. μ.

Q.No 30 The department claims that the exceeds Rs. 2500 at the 0.05 level of, then formulate null alternative hypothesis?

Formulation:

$H_0 : \mu < 2500$

$H_1 : \mu > 2500$

units within restrictions.

Q No26 Can we control type I error and type II error?

To control Type I error we can set simple a lower significance level.

While Type II error is impossible To control completely, The only possible chance To control Tye II error by increasing sample size.

Q No27 $n = 15$, $\alpha = 95\%$ Then find $t_{\alpha/2;v} = ?$

we are given that

$n = 15$, $\alpha = 95\% = 0.15$

$\alpha/2 = 0.95/2 = 0.075$

$V = n - 1 = 15 - 1 = 14$

یہاں $x_{0.75}$ اور $x_{0.25}$، Q_3 اور Q_1 لیں
normal distribution میں ایسے ہی لکھتے۔

Q No 24 Why we use pooled proportion instead of individual p?

We use the pooled proportion instead of individual proportion, because the pooled proportion estimate the standard error and individual not-

Q.No20 what is relationship b/w level of significance and critical region?

A critical region specifies a set of values of the test statistic for which null hypothesis is rejected.

The actual type I error that we get by using critical region it will be the level of significance-

Q.No21 what is g(x) and h(y)?

From the joint probability function for (X,Y), we can obtain the individual probability function of X and Y.

∴ individual probability function ka matlb hai X is alg or y ke alg probability

Such individual probability function are called marginal probability function.

The marginal p.f of X

$g(x) = P(X=x)$

The marginal p.f of Y

$h(y) = P(Y=y)$

Q.No22 Define point estimation-

The object of point estimation is to obtain a single number from the sample of unknown true value of population

Q No 19 $n = 1150$, $x = 450$, $P_0 = 0.39$

$H_0 : P_0 = 0.39$, $\alpha = 0.01$

Stated hypothesis.

1- Formulation

$H_0 : P_0 = 0.39$

$H_1 : P_0 \neq 0.39$

2- LOS

$\alpha = 0.01$, $\alpha/2 = 0.01/2 = 0.005$, $1 - \frac{\alpha}{2} = 0.995$

3- Test statistic

$$z = \frac{x - np_0}{\sqrt{np_0 q_0}}, \quad z = \frac{(x \pm 1/2) - np_0}{\sqrt{(np_0 q_0)}}$$

4- Critical region

$z_{1-\alpha/2} = z_{0.995} = 2.576$

$|z|_c < 2.576$

5- Calculation

we are given that

$n = 1150$, $x = 450$, $P_0 = 0.39$

$q_0 = 1 - P_0 = 1 - 0.39 = 0.61$

~~$z = 4.50$~~

$$z = \frac{(450 - 1/2) - (1150)(0.39)}{\sqrt{(1150)(0.39)(0.61)}}$$

$$= \frac{449.5 - 448.5}{16.540}$$

$$= \frac{1}{16.540} = 0.0604$$

$z = 0.0604$

6) Conclusion

Since $|z|_c < 2.576$

$0.0604 < 2.576$

It does not lies in rejection region so we do

Q No 15

Find value of χ^2 test statistic if $n = 2.5$, $s^2 = 3$, $\sigma_0^2 = 18$

we know that

$$\chi^2 = \frac{ns^2}{\sigma^2}$$

$$= \frac{(2.5)(3)}{18} = 0.4167$$

Q No 16 Write variance of hypergeometric distribution.

$$\text{Variance} = \frac{nk}{N}\left(1 - \frac{k}{N}\right)\left(\frac{N-n}{N-1}\right)$$

Q No 17 Find proportion of X_1 & X_2 if

$X_1 = 300$, $n_1 = 400$

$X_2 = 200$, $300 = n_2$

Proportion of X_1

$$P_1 = \frac{X_1}{n_1} = \frac{300}{400} = \frac{3}{4} = 0.75 = 75\%$$

Proportion of X_2

$$P_2 = \frac{X_2}{n_2} = \frac{200}{300} = \frac{2}{3} = 0.667 = 66.7\%$$

Q No 18 What is Joint distribution?

The distribution of Two or more random variables which are observed simultaneously when an experiment is performed, is called Joint distribution.

Q No 14

Let T_1 and T_2 are Two unbiased estimators. variance is

$V(T_1) = \frac{11\sigma^2}{9}$ and $Var(T_2) = \frac{13\sigma^2}{9}$

which estimator is more efficient and why?

~~We know~~

we are given that

$Var(T_1) = \frac{11\sigma^2}{9}$, $Var(T_2) = \frac{13\sigma^2}{9}$

we know that

$$E_f = \frac{Var(T_2)}{Var(T_1)} = \frac{13\sigma^2/9}{11\sigma^2/9}$$

$$= \frac{13\sigma^2}{9} \times \frac{9}{11\sigma^2}$$

$$= \frac{13}{11}$$ - which is greater Then 1, showing that $Var(T_1) < Var(T_2)$. Thus T_1 is more efficient Than T_2

Q#013 Assume that X has a poisson distribution with variance 2
Calculate $P(X=2)$

we know that
The distribution function of poisson distribution is

$$P(X=x) = \frac{e^{-\mu}\mu^{x}}{x!}$$

We are given that
variance = 2
In poisson distribution
variance = mean = $\mu = 2$

So

$$P(X=2) = \frac{e^{-2}(2^2)}{2!}$$

$$= \frac{(0.1353)(4)}{2}$$

$$= 0.2706$$

Q No 10 If $E(X) = 10$, $E(Y) = 9$
find $E\left(\frac{5}{10}X + \frac{2}{6}Y\right)$

We are given that
$E(X) = 10$, $E(Y) = 9$
We have to find
$= E\left(\frac{5}{10}X + \frac{2}{6}Y\right)$

$= \frac{5}{10}E(X) + \frac{2}{6}E(Y)$

$= \frac{5}{10}(10) + \frac{2}{6}(9)$

$= 5 + 3 = 8$

Q No 11 In a normal distribution
How much data that fall in interval
$\mu \pm 3\sigma$

In normal distribution 99.73% dat fall in the $\mu \pm 3\sigma$ interval

یہاں پہ $\mu \pm \sigma$ اور $\mu \pm 2\sigma$ کا
بھی لکھ رہی تھی دونوں آ گئے۔

$\mu \pm \sigma = 68.27\%$
$\mu \pm 2\sigma = 95.45\%$

Q#09 Critical region for following hypothesis

$H_0 : \sigma^2 = 25$

$H_1 : \sigma^2 \neq 25$

where $\alpha = 0.05$, $n = 25$

Critical region

$|z| < z_{1-\alpha/2}$

~~1-α~~ $\alpha = 0.05$, $\alpha/2 = 0.025$

$1 - \frac{\alpha}{2} = 0.975$

$z_{1-\alpha/2} = 1.96$

$|z| < 1.96$

X that can assume between x=1 and x=4 has a density function given by

$$f(x) = \frac{1}{3}$$

a) Show that the area under curve is equal to 1

b) Find $P(1.5 < X < 3)$

a) we have to show that

$$\int_{-\infty}^{\infty} f(x)\,dx = 1$$

So

$$\int_{1}^{4} \frac{1}{3}\,dx = 1 \quad , \quad \frac{1}{3}\int_{1}^{4} dx = 1$$

$$\frac{1}{3}[x]_1^4 = 1$$

$$\frac{1}{3}[4-1] = 1$$

$$\frac{1}{3}(3) = 1$$

$$1 = 1$$

proved

b) $P(1.5 < X < 3)$

$$P(1.5 < X < 3) = \int_{1.5}^{3} \frac{1}{3}\,dx$$

$$= \frac{1}{3}\int_{1.5}^{3} dx$$

$$= \frac{1}{3}[x]_{1.5}^{3}$$

$$= \frac{1}{3}[3-1.5] = \frac{1}{3}[1.5]$$

$$= 0.5$$

Q No 7 Write Range, parameters and formulas for binomial distribution

Range

It range is from $0, 1, 2, \ldots n$

Parameters

It have only 2 parameters

n, p

Formulas

The distribution function is

$$P(X=x) = \binom{n}{x} p^x q^{n-x}$$

mean $= np$

variance $= npq$

QNo4 Name the measures of dispersion that are not based on all values?

1- Range
2- Quartile deviation

QNo5 what is a poisson distribution?

Poisson distribution is also known as rare events distribution. Poisson distribution is limiting form of binomial distribution under conditions:

* 'n' trials are efficiently large
* 'p' very small → 0
* $0.05 \leq np \leq 20$

The probability function of poisson distribution is

$$P(X=x) = \frac{e^{-\mu}\mu^{x}}{x!}$$

Ans) Given $N=10$, $n=4$ & $K=5$
find $E(X)$, $Var(X)$?

we are given that
$N=10$, $n=4$, $K=5$

&
we have to find
$E(X) = ?$, $Var(X) = ?$
we know that, the given data is in hypergeometric distribution, So

$$E(X) = \frac{nK}{N}$$

$$= \frac{(4)(5)}{10} = \frac{20}{10} = 2$$

$$\boxed{E(X) = 2}$$

$$Var(X) = \frac{nK}{N}\left(1-\frac{K}{N}\right)\left(\frac{N-n}{N-1}\right)$$

(3)

$$= \frac{(4)(5)}{10}\left(1-\frac{5}{10}\right)\left(\frac{10-4}{10-1}\right)$$

$$= \frac{\cancel{20}}{\cancel{100}}\left(\frac{5}{10}\right)\left(\frac{6}{9}\right)$$

$$= \frac{6}{9}$$

$$\boxed{Var(X) = 0.6667}$$

QNO15

Test the independence by a simple approach b/w intelligence of fathers and sons.

Sons	Intelligent	Non-Intelligent	Total
Intelligent	(AB) = 300	(Aβ) = 200	(A) 500
Not-Intelligent	(αB) = 100	(αβ) = 400	(α) 500
Total	(B) = 400	(β) = 600	n = 1000

Let 'A' denotes intelligent father and 'B' denotes intelligent sons

Then

$$(AB) = 300$$

$$\frac{(A)(B)}{n} = \frac{(500)(400)}{1000} = 200$$

$$(AB) > \frac{(A)(B)}{n}$$

$$300 > 200$$

Thus there is +ve association b/w father and sons's intelligent.

Lecture 45

Q No 14

Find Coefficient of association

$AB = 55, \alpha B = 75, A\beta = 45, \alpha B = 125$

we know that

coefficient of association

$$Q = \frac{(AB)(\alpha\beta) - (A\beta)(\alpha B)}{(AB)(\alpha\beta) + (A\beta)(\alpha B)}$$

we are given that

$AB = 55, (\alpha\beta) = 75, A\beta = 45, \alpha B = 125$

$$= \frac{(55)(75) - (45)(125)}{(55)(75) + (45)(125)}$$

$$= \frac{4125 - 5625}{4125 + 5625} = \frac{-1500}{9750}$$

$$Q = -0.1538$$

This indicate negative association b/w A and B.

Q#010

if $\bar{x}=250, n=630, p_0=0.50$

then find the z-test statistic for proportion

we are given that

$\bar{x}=250$, $n=630$, $p_0=0.50$, $q_0=1-0.5=0.5$

we have to find

$$Z=\frac{\bar{x}-np_0}{\sqrt{np_0q_0}}$$

$$=\frac{250-(630)(0.5)}{\sqrt{(630)(0.50)(0.5)}}=\frac{250-315}{\sqrt{157.5}}$$

$$=\frac{250-315}{12.55}=\frac{-65}{12.55}=-5.17$$

(20

$Z=-5.17$

Q#011

1- Formulation

$H_0: \mu_1=\mu_2 \Rightarrow \mu_1-\mu_2=0 \quad (\delta_0=0)$

$H_1: \mu_1\neq\mu_2 \Rightarrow \mu_1-\mu_2\neq 0 \quad (\delta_0\neq 0)$

$\therefore \mu_1-\mu_2=\delta_0$

2- Level of significance

$\alpha=5\%=0.05$

$\frac{\alpha}{2}=0.025$, $1-\frac{\alpha}{2}=0.975$

3- Test statistic

$$Z=\frac{(\bar{X}_1-\bar{X}_2)-\delta_0}{\sqrt{\frac{\sigma_1^2}{n_1}+\frac{\sigma_2^2}{n_2}}}$$

4- Critical region

$Z_{1-\frac{\alpha}{2}}=Z_{0.975}=1.96$

$|Z|>1.96$

(20

5- Calculation

we are given that

$n_1=100$, $\bar{X}_1=1190$, $\sigma_1=90$

$n_2=75$, $\bar{X}_2=1230$, $\sigma_2=120$

we have to calculate

$$Z=\frac{(\bar{X}_1-\bar{X}_2)-\delta_0}{\sqrt{\frac{\sigma_1^2}{n_1}+\frac{\sigma_2^2}{n_2}}}$$

$$=\frac{(1190-1230)-0}{\sqrt{\frac{(90)^2}{100}+\frac{(120)^2}{75}}}=\frac{-40}{\sqrt{81+192}}$$

$$=\frac{-40}{16.5227}$$

$Z=-2.42$

6- Conclusion

Since

$|-2.42|>1.96$

so we reject H_0 against H_1

Q No 8

Given that X is normally distributed and given the sample values $\bar{x}=42$, $S=5$ and $n=20$. Find the 98% confidence interval for σ^2.

We are given that

$\bar{x}=42$, $S=5$, $n=20$

$1-\alpha = 98\% = 0.98 \Rightarrow \alpha = 1-0.98 = 0.02$

$\frac{\alpha}{2} = 0.01 \Rightarrow 1-\frac{\alpha}{2} = 0.99$

$v = n-1 = 20-1 = 19$

$$\frac{nS^2}{\chi^2_{\frac{\alpha}{2},v}} < \sigma^2 < \frac{nS^2}{\chi^2_{1-\frac{\alpha}{2},v}}$$

$$\frac{(20)(5)^2}{\chi^2_{0.01;19}} < \sigma^2 < \frac{(20)(5)^2}{\chi^2_{0.99;19}}$$

$$\frac{500}{36.19} < \sigma^2 < \frac{500}{7.63}$$

$13.82 < \sigma^2 < 65.53$

The required confidence interval for σ^2.

Q.No 9

Given that. X is normally distributed and given sample values

$\Sigma(x-\bar{x})^2 = 2.576$, and n=10. Find the 95% confidence interval for σ^2.

We are given that

$\Sigma(x-\bar{x})^2 = 2.576$, $n=10$, $\nu = n-1 = 9$

$1-\alpha = 95\% = 0.95 \Rightarrow \alpha = 1-0.95 = 0.05$

$\alpha/2 = 0.05/2 = 0.025 \Rightarrow 1-\alpha/2 = 1-0.025 = 0.975$

we have to find

$$\frac{\Sigma(x-\bar{x})^2}{\chi^2_{\alpha/2,\nu}} < \sigma^2 < \frac{\Sigma(x-\bar{x})^2}{\chi^2_{1-\alpha/2,\nu}}$$

$$\frac{2.576}{\chi^2_{0.025,9}} < \sigma^2 < \frac{2.576}{\chi^2_{0.975,9}}$$

$$\frac{2.576}{19.02} < \sigma^2 < \frac{2.576}{2.70}$$

$$0.135 < \sigma^2 < 0.95$$

Lecture 38-42

QNo1

if $n=10$ & $\alpha=0.05$, find $t_{\alpha/2;v}$

we are given that

$n=10$, $\alpha=0.05$, $t_{\alpha/2;v}=?$

we know that

$V=n-1 = 10-1=9$

$\alpha=0.05 \Rightarrow \frac{\alpha}{2} = \frac{0.05}{2} = 0.025$

$t_{\alpha/2;v} = t_{0.025;9} = +2.262$

$\boxed{t_{0.025;9} = 2.262}$: From Table of t-distribution

QNo2

If $n=5$ and $\alpha=0.05$, find $t_{\alpha/2;v}$ =

we are given that

$n=5$, $\alpha=0.05$, $t_{\alpha/2;v}=?$

we know that

$V=n-1 = 5-1=4$

$\alpha=0.05 \Rightarrow \frac{\alpha}{2} = \frac{0.05}{2} = 0.025$

$t_{\alpha/2;v} = t_{0.025;4} = 2.776$

$\boxed{t_{0.025;4} = 2.776}$

QNo3

Write down critical region for the following ~~distribution~~ hypothesis.

$H_0 : \sigma^2 = 18$

$H_1 : \sigma^2 > 18$

Critical region

~~reject $Z > Z_{1-\alpha}$~~

reject H_0 if

$Z_{(c)} > Z_{1-\alpha}$

$\therefore$ calculated

Q#04 Find upper limit :

we are given that

$\bar{X} = 400$, $\sigma = 21$, $n = 29$

$1 - \alpha = 0.95 \Rightarrow \alpha = 1 - 0.95 \Rightarrow 0.05$

$\frac{\alpha}{2} = 0.025 \Rightarrow 1 - \frac{\alpha}{2} = 0.975$

Now

$$\bar{X} \pm Z_{1-\alpha/2} \frac{\sigma}{\sqrt{n}}$$

$$400 \pm Z_{0.975} \frac{21}{\sqrt{29}}$$

$$400 \pm 1.960 \frac{21}{\sqrt{29}}$$

$400 + 7.643$

407.643

Q#05

Define one tailed and Two tailed test

One tailed Test.

If the critical region is located in only on tail of the sampling distribution of test statistic, the test is called one-tailed Test.

Two-tailed Test

If the critical region is located equally in both tails of sampling distribution of Test statistic, the test is called Two-tailed test.

Lecture 33-37

Q.No1

Define an unbiased estimator.

An estimator is unbiased if the mean of its sampling distribution is equal to the population parameter to be estimated.

$$E(T) = \theta$$

OR

An estimator is defined to be unbiased if the statistic is used as a estimator has its expected value equal to the true value of population parameter being estimated

$$E(\hat{\theta}) = \theta$$

Q.No2

What is meant by confidence interval?

A confindence interval estimate of the unknown parameter θ is an interval computed from a random sample of n values $x_1, x_2, \ldots, x_n$ with a statement of how confident (e.g 90%, 95% or 99%).

we are that the interval contains the unknown parameter θ.

$$P(L < \theta < U) = 1 - \alpha \text{ for } 0 < \alpha < 1$$

L: lower limit, U: upper limit

QN03 A computer shop contain 3 goods and 2 defective moniter. Two moniters are selected by without replacement. Find the probability that:

i) Both will be good

ii) One is good and one is defective

Solution

we are given that

good monitors = 3

defective monitors = 2

Total = 5

Selected = 2

i) Both will be good

$$P(X=2) = \frac{\binom{3}{2}\binom{2}{0}}{\binom{5}{2}} = \frac{3(1)}{10}$$

$$\boxed{P(X=2) = \frac{3}{10}}$$

ii) 1 good & 1 defective

~~P(X=1 &~~

P(X=1 is good + Y=1 is defective)

$$= \frac{\binom{3}{1}\binom{2}{1}}{\binom{5}{2}} = \frac{3 \times 2}{10} = \frac{6}{10}$$

$$\boxed{P(X=1)+P(Y=1) = \frac{6}{10}}$$

QN03 A computer shop contain 3 goods and 2 defective moniter. Two monitor are selected by without replacement. Find the probability that:

i) Both will be good

ii) One is good and one is defective

Solution

we are given that

good monitors = 3

defective monitors = 2

Total = 5

Selected = 2

i) Both will be good

$$P(X=2) = \frac{\binom{3}{2}\binom{2}{0}}{\binom{5}{2}} = \frac{3(1)}{10}$$

$$\boxed{P(X=2) = \frac{3}{10}}$$

ii) 1 good & 1 defective

~~P(X=1 &~~

P(X = 1 is good + ~~X~~ 1 is defective)

$$= \frac{\binom{3}{1}\binom{2}{1}}{\binom{5}{2}} = \frac{3 \times 2}{10} = \frac{6}{10}$$

$$\boxed{P(X=1)+P(X=1) = \frac{6}{10}}$$

Q No 2.

if $P(X=x) = \binom{6}{x}\left(\frac{1}{2}\right)^x\left(\frac{1}{2}\right)^{6-x}$

Then find $P(X=5)$.

$$P(X=x) = \binom{6}{x}\left(\frac{1}{2}\right)^x\left(\frac{1}{2}\right)^{6-x}$$

we have to find

$$P(X=5) = ?$$

$$P(X=5) = \binom{6}{5}\left(\frac{1}{2}\right)^5\left(\frac{1}{2}\right)^{6-5}$$

$$= (6)\left(\frac{1}{32}\right)\left(\frac{1}{2}\right)$$

$$\boxed{P(X=5) = \frac{3}{32}}$$

Let X be a Continuous r.v with p.d.f

$$f(x) = 6x(1-x) \quad , \quad 0 \le x \le 1$$
$$= 0 \quad , \quad \text{elsewhere}$$

check that $f(x)$ is a p.d.f

The function be a density function if

$$\int_{-\infty}^{\infty} f(x)\,dx = 1$$

$$\int_{0}^{1} 6x(1-x)\,dx = 1$$

$$\int_{0}^{1} 6x - 6x^2 = 1$$

$$6\left[\frac{x^2}{2}\right]_0^1 - 6\left[\frac{x^3}{3}\right]_0^1 = 1$$

$$\frac{6}{2}[1-0] - \frac{6}{3}[1-0] = 1$$

$$3(1) - 2(1) = 1$$
$$3 - 2 = 1$$
$$1 = 1$$

Hence proved that the function $f(x)$ is a p.d.f

Let X be a Continuous r.v with p.d.f

$$f(x) = 6x(1-x) \quad , \quad 0 \le x \le 1$$
$$= 0 \quad , \quad \text{elsewhere}$$

Check that $f(x)$ is a p.d.f

The function be a density function if

$$\int_{-\infty}^{\infty} f(x)\,dx = 1$$

$$\int_{0}^{1} 6x(1-x)\,dx = 1$$

$$\int_{0}^{1} 6x - 6x^2 = 1$$

$$6\left[\frac{x^2}{2}\right]_0^1 - 6\left[\frac{x^3}{3}\right]_0^1 = 1$$

$$\frac{6}{2}\left[1-0\right] - \frac{6}{3}\left[1-0\right] = 1$$

$$3(1) - 2(1) = 1$$
$$3 - 2 = 1$$
$$1 = 1$$

Hence proved that the function $f(x)$ is a p.d.f

Q No 2

Find $g(2)$

y \ x	2	4	h(y)
1	0.10	0.15	0.25
3	0.20	0.30	0.50
5	0.10	0.15	0.25
g(x)	0.4	0.6	1

$g(2) = ?$

$$\boxed{g(2) = 0.4}$$

STA301

Practice Questions

lecture No 23 to 27

QNo1: Find $E(X)$

x	$f(x)$	$xf(x)$
-1	0.125	-0.125
0	0.50	0
1	0.20	0.20
2	0.05	0.1
3	0.125	0.375
		0.55

We know that

$E(X) = \Sigma x f(x)$

$= 0.55$

$$\boxed{E(X) = 0.55}$$

Q112: The T test for independent sample assume which of the following

- Score are independent
- Scorer dependent
- Groups have equal medians
- Alpha is the probability of

Q113: The level of significance is also called

- Power of test
- Type II error
- Type I letter
- Acceptance region

Q114: For a sample p1=0.2,n1=100 and for second sample p2 =0.5 and n2=200the pooled estimator pc is

- 0.30
- 0.45
- 0.40
- 0.35

Q115: The location of the critical region depends upon

- Null hypothesis
- Alternative hypothesis
- Value of alpha

Q116: Meaning of T distribution will not exist when D.F will equal to

- 1
- 2
- 3
- 4

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H1: mean<50 then the rejection region will be

- In the center
- On left side of mean
- On right side of Mean
- On both sides

Q107: If our significance level of 5% is used rather than 1% the null hypothesis is

- Less likely to be rejected
- Just as likely to be rejected
- More likely to be rejected
- None of these

Q108: How can we interrupt our 90% confidence interval for the mean of the normal population

- There is 10% chance of falling true value of the parameter
- There are 90% Johns are falling true value of the perimeter
- There are 100 chance of finding true value of parameter
- All are correct

Q109: When examining group difference where no direction of the difference is specified which of the following is used

- One tailed test
- Two tailed test
- Directional hypothesis
- Difference of mode test

Q110: T distribution can never become narrower then

- F distribution
- Standard normal distribution
- Chi-Square distribution
- Exponential distribution

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Q102: Suppose H0: p=0 H1:p,0 and critical value is Z=2.33if calculate the value of Z=-2.60 then what will be your calculation

- Accept Ho
- Reject HO
- Impossible to decide
- None of the above

Q102: If the null hypothesis is that the the average height of Pakistan soldiers exceed the average height of American soldiers by more than 3 inches what will it's alternative hypothesis

- p>3
- p<3
- P=3
- None of the above

Q103: Pairing is done only in case of ….. observation

- Dependent
- Independent
- Small
- Large

Q104: The critical region is computed from the value of

- alpha
- Beta
- 1-Alpha
- 2-Beta

Q105: When examining group difference where not direction of the difference is specified which of the following is used

- one tail test
- Two tail test
- Directional hypothesis
- Difference of mode test

Q106: If we traveling at H0 :mean = 50 against

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Q97: If we draw a sample of size 'n' from a population then sample is called 'large sample' if;

a. N>30
b. N>501
c. N>40
d. N>25

98: When sample size is to be considered large population standard deviation can be replaced by

- Population variance
- Sample variance
- Sample mean
- Sample standard derivation

Q99: Suppose that the worker of factory B believe that the average income of the worker of factory A exceeds their average income the hypothesis will be

- MeanA>MeanB
- MeanA>/MeanB
- MeanA<MeanB
- MeanA</MeanB

Q100: For particular hypothesis test alpha = 0.09 and beta = 0.03 what is the value of type of error

- 0.09
- 0.91
- 0.03
- 0.97

Q101: Suppose H0:u1<u2 H1:u1.u2 and critical value is = 1.645if calculated value of z= 1.88then what will be your

- Accept Ho
- Reject HO
- Impossible to decide
- None of the above

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Q87: A …….. Is a range of number is inferred from the sample that has a certain probility of including the population parameter over the long run.

a. Hypotheses
b. Lower limit
c. Confidence interval
d. Probability limit

Q88: To determine a sample size which test we use……

a. t
b. F
c. None of these
d. z

Q90: A statistic whose standard error decreases with an increase in the sample size will be…

a. consistent
b. unbiased
c. efficient
d. none

Q91: A deserving player was not in the cricket team . it is an example of:

a. type111error
b. type-1 error
c. type-iv error
d. type-111 error

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Q82: The method of maximum likelihood (ML) is used to find out:

a) point estimates
b) random number
c) correlation coefficient
d) sample value

Q83: The precision of an estimates can be increased by increasing the:

a) sample value
b) size of population
c) number of parameters
d) size of sample

Q84: which of the following is most important and widely used methods in point estimates?

a) The method of least squares
b) The method of moments
c) The method of maximum likelihood
d) sample value

Q85: In a random sample of 500 men from Lahore city, 300 are found to be smokers. the proportion of smokers is equal to

a. 0.6
b. 0.3
c. 0.5
d. 0.4

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Q76: An estimator is said to be efficient if it has:

a) Smallest variance
b) Unbiased variance
c) Both (a & b)
d) None of these

Q77: Conventionally, the probability of making a type-1 error is denoted by which of the following symbol?

a) S(sigma)
b) β(beta)
c) ? (theta)
d) a(alpha)

Q78: The end points that bound the confidence interval are called:

a) Lower limit
b) Bounded limit
c) Lower and upper limits
d) Upper limits

Q79: An estimator is said to be ____ if its expected value is equal to true value of its parameter.

a) Efficient
b) Consistent
c) Biased
d) un Biased

Q80: The width of the interval is called ____ of the estimate.

a) Biased
b) Accuracy
c) Precision
d) Unbiasedness

Q81: If we draw a sample of size "n" from a population then sample is called "large sample"it.

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Q72: As sample size goes up, what tends to happen to 95% confidence intervals?

- They become more narrow
- They become more precise and narrow
- They become more precise
- They become wider

Q73: An industrial designer wants to determine the average amount of time it takes an adult to assemble an "easy to assemble" toy. A sample of 16 times yielded an average time of 19.92 minutes, with a population standard deviation equal to 5.73 assuming normality of assembly times. What is a 95%.

- (14.1123,22.7277)
- (17.1123,24.7277)
- (17.1123,22.7277)
- (17.1123,30.7277)

Q74: Suppose that the worker of factory b believes that the average income of the worker of factory A exceed their average income, the hypothesis will be:

- Mean A > Mean B
- Mean A ≥ Mean B
- Mean A < Mean B
- Mean A ≤Mean B

Q75: β is the probability of:

a) Reject HO/HO is true
b) Reject HO/HO is false
c) Accept HO/HO is false
d) Accept HO/HO is true

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Q67: In a geometric distribution, maximum likelihood estimator (MLE) for proportion (P) is equal to:

- Sample variance
- Sample mean
- Reciprocal of the sample variance
- Reciprocal of the mean

Q68: Internal estimation and Confidence interval are:

- Different
- Independent
- Dependent
- Same

Q69: "A failed student was passed by the examiner", is an example of:

- Type-I error
- Type-IV error
- Type-III error
- Type-II error

Q70: A confidence interval has a specified probability _____ of containing the true value of parameter.

- a
- a/2
- 1+a
- 1-a

Q71: When sample size is to be considered large, population standard deviation can be replaced by

- Sample variance

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Q59: Inferential statistics involves:

- Testing of hypothesis
- All of these
- Confidence interval
- Estimation

Q60: Ideally, the width of confidence interval should be

- 98
- I
- 100
- 0

Q61: Sample proportion is a/an _____ estimator of population mean.

- Consistent
- Unbiased
- Unbiased and consistent estimator
- None of these

Q62: If var (TI) > Var (T2), where TI and T2 are two unbiased estimators, then:

- TI is more consistent
- T2 is more consistent
- TI is more efficient

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Q55: Alpha is the probability of .....

- Making type I error
- Accepting HO when it is true
- Rejecting HI when it is wrong
- Making type II error

Q56: It is the probability of:

- Accept HO_I HO is true
- Reject HO_I HO is true
- Accept HO_I HO is false
- Reject HO_I HO is true

Q57: In interval estimation we obtained a ..... of values as an estimate of parameter.

- Both a and b
- Range
- Group
- None of these

Q58: We can apply method of Maximum likelihood on:

- Qualitative variables only
- Discrete variables only

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Q51: In testing HO: $\mu = 100$ against HI: $\mu \leq 100$ at the 10% level of significance, HO is rejected if:

- The p-value is greater than 0.10
- The p-value is less than 0.10
- 100 is contained in the 90% confidence interval
- The value of the test is static in the acceptance region

Q52: In the method of moments, how many equations are required for finding two unknown

- 2
- 4
- 1
- 3

Q53: To determine a sample size in estimating population mean, we use the _____ value.

- X
- Z
- F
- T

Q54: The method of maximum likelihood (ML) is used to find out:

- Random numbers

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Q45: When we start hypothesis testing, we always assume that:

- HO is true
- HO is false
- H1 is true
- All are correct

Q46: to test hypothesis about the different of means for small samples, test statistics will be used:

- F- test
- Z- test
- T-test
- All of these

Q47: ideally, the width of confidence interval should be:

- 0
- 1
- 98
- 100

Q48: conventionally, the probability of making a type- I error is denoted by which of following Symbol?

- ?(theta)
- A(Alpha)
- B(beta)
- S(sigma)

Q49: in a random sample of 500 men from Lahore city, 300 are found to smoker ; the proportion of smoker is equal to:

- 0.3
- 0.4
- 0.6
- 0.5

Q50: if we are testing HO : P1 – p2= 120 against H1 : P1 – P2 > 120 (exceeds 120) then rejection region:

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Q40: if we are testing HO : p1 < P2 (0r) p1 – p2 <0 against H1 : p1> P2(or) p1- p2 > 0 and the tabulated of Z= 1.645 and Z Calculated value = 2.63 then what will be conclusion\end {gathered}\]

- Reject Ho
- Accept HO
- None of the above
- Impossible to decide

Q41: In Binomial distribution the sample size is considered to be sufficiently large, if both np and nq are greater than or equal to

- 3
- 5
- 10
- 15

Q42: if the NULL hypothesis says that the average height of Pakistani soldiers exceeds the average height of American solider but not more than 3 inches. What will be it's ALTERNATIY hypothesis?

- P > 3
- P<3
- P= 3
- None of this

Q43 : the critical region is computed from the value of .

- Alpha
- Beta
- 1 – Alpha
- 1- beta

Q44: To the test hypothesis about the difference of means for large simple , what test statistics will be used?

- Chi- square
- F
- Z
- T

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Q35: As sample size goes up, what tends to happen to 95 %confidence interval?

- They become wider
- They become more precise
- They become more precise and narrow
- They become more narrow

Q36: to determine a simple size which test lest we use------

- Z
- I
- F
- None these

Q37: How can we interpret 90% confidence interval for the mean of the normal population?

- There are 10 % chances of falling true value of the parameter
- There are 90%cahnces of falling true value of the parameter
- There are 100 chances of falling true value of the parameter
- All are correct

Q38: for the smaller values of v, the t distribution will be ------than the standard normal distribution.

- Less spread out
- More spread out
- Same length
- None of these

Q39: if we are testing HO : mean = 50 against

H1 : mean < 50 then rejection region will be

- In the center
- On left side of mean
- On right side of mean
- On both side

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Q31: A-------- is a range of number inferred from the sample that sample that has a certain probability of including the population parameter over the long run.

- Hypothesis
- Lower limit
- Confidence interval
- Probability limit

Q32: The proportion of cigarette smokers in Pakistan is greater than 20% , the null hypothesis Hois,

- $P < 0.20$
- $P \neq 0.20$
- $P \subseteq 0.20$
- $P > 0.20$

Q33: A null hypothesis is generally denotes by:

- H0
- H1
- H2
- H3

Q34: A deserving player was not selected in the cricket team .it is an example of

- Type-I error
- Type – II error
- Type – III error
- Type – Iv error

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Q26: for test hypothesis Ho $\mu 1 = \mu 2$ and H1: $\mu 1 < \mu 2$, the critical region at 0.05 level of significance and n>30

- Z less and equal 1.96
- Z > 1.96
- Z > 1.645
- Z<-1.645

Q27: Alpha is the probability of……..

- Making type I error
- Making Type II error
- Accepting Ho when it is true
- Rejecting H1 when it is wrong

Q28: The test statistic to test the U1 = U2 (U represent the mean of population normal population when n > 30.

- Z- test
- T – test
- F – test
- All of above

Q29: Suppose that the workers of factory B belives that the average income that the average income of the workers of factory A exceed that average income the null hypothesis will be

- MeanA > MeanB
- MeanA ⊇ MeanB
- MeanA< MeanB
- MeanA ⊆ MeanB

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Q20: which of the following is the requirement of a uniform distribution?

- A constant probability of success
- Only two possible outcomes
- A fixed number of trials
- Equally likely outcomes

Q21: if we are testing H0 : mean = 250 against

H1 : mean > 250 (exceeds 250) . Then Rejection region will be

- In the center
- On both sides of mean
- On left side of mean
- On right side of mean

Q22: Suppose H0: u 1< u 1 H1 :u 1 > u 2 and critical value is value = 1.645 if calculated value of Z = 1.88 then what will be your conclusion?

- Accept Ho
- Reject Ho
- Impossible to decide
- None of the above

Q23: The t-distribution can never become narrower than:

- F-distribution
- Standard normal distribution
- Chi-square distribution
- Exponential distribution

Q24: t-distribution can be used to find the confidence interval for:

- Population variance
- Population mean
- Difference between population proportions
- Populating proportion

Q25: which one the following provides the basis for hypothesis testing?

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Q16: Poisson distribution is never:

- Symmetrical
- Positively skewed
- Negatively skewed
- Asymmetrical

Q17: if X and Y are independent, then Cov (X, y) is equal to:

- 0
- 1
- 0 and 1
- None

Q18: if E(x) = 3 then E (4X + 3)=……..

- 15
- 12
- 8
- 3

Q19: Which of the following is not a requirement of a binomial distribution?

- A constant probability of success
- Only two possible outcomes
- A fixed number of trials
- Equally likely outcomes

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Q11: which of the following is not a property of binomial experiment?

- The experiment consists of a sequence of n identical trials
- Each outcome can be referred to as a success or a failure
- The probabilities of the outcomes can can change from on trial to the next
- All of the above

Q12: Poisson distribution can be used to approximate the hyper geo metric distribution when , n<0.05, n>20 and

- P>0.05
- P<0.05
- P>0.10
- P<0.10

Q13: the hypergeomertrie probability distribution has parameters.

- N, n
- N, P, n
- N, n, k
- N, N-k, n

Q14: A random experiment is one is a one in which we repeat it a large number of times under similar condition an it produces.

- Same result
- Different result
- Independent result
- None of the above

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Q6: we can obtain the individual probabilities of X and Y fro probability function / distribution of (x, y) such individual pro. are kown as

- Marginal probabilities
- Bivariate probabilities
- Separate probabilities
- Independent probabilities

Q7: Assume a large distribution in which 6 = 6. What is the standard error of the the mean based for which n = 10?

- 167
- 15
- 3
- 1.9

Q8: In a bivariate probability distribution of X and Y,

If f(1, 1)= 4/15, g (1) =2/3 , h(1)=2/5

Then

- X and Y are statistically independent
- X and y are not statistically independent
- Both of these
- None of these

Q9: In hyper geometric distribution events can be classified in to

- A single category
- 2 categories
- 3 categories
- 4 categories

Q10: In binomial distribution, formula of calculating mean is:

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Q5: which of the following is not a property of a binomial experiment?

- The experiment consists of a sequence of an identical trials
- Each outcome can be referred to as a success or a failure

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- The probabilities of the two outcomes can change from one trial to the next.
- All of the above

Q6: we can obtain the individual probabilities of X and Y fro probability function / distribution of (x, y) such individual pro. are kown as

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- 2 categories
- 3 categories
- 4 categories

Q10: In binomial distribution, formula of calculating mean is:

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- $\mu = p + q$
- $\mu = np$
- $\mu = p\,q$
- $\mu = q\,n$

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- P<0.05
- P>0.10
- P<0.10

Q13: the hypergeomertrie probability distribution has parameters.

- N, n
- N, P, n
- N, n, k

Q1: The marginal p.d.f of any continuous variable of obtained by .....

- Averaging
- Integrating
- Multiplying
- Dividing

Q2: in a normal distribution how area lies between $\mu \pm \sigma$

- 65%
- 68.26%
- 75%
- 80%

Q3: A correlation coeffient

- Tells you the direction of the slope of the scttergram
- Is a sort of index how of close the point of a scatter gram deviated from straight line through those points.
- Efficiently summaries some of the in scatterplot.
- All of these

Q4: The values of moment ratios b1 and b2 of normal distribution are:

- 0 and 1
- 0 and 2
- O and3
- 0 and 4

Q5: which of the following is not a property of a binomial experiment?

- The experiment consists of a sequence of an identical trials
- Each outcome can be referred to as a success or a failure

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- The probabilities of the two outcomes can change from one trial to the next.

Question No: 21 (Marks: 1)
Write down the formula for binomial distribution.

Answer:- (Page 212)

$$P(X=x)=\binom{n}{x}p^x q^{n-x}$$

Question No: 22 (Marks: 2)
Write down the formula for testing the equality of two population proportions.

Answer:- (Page 290)

$$Z=\frac{\left(\hat{p}_1-\hat{p}_2\right)-0}{\sqrt{\hat{p}_c\,\hat{q}_c\left(\frac{1}{n_1}+\frac{1}{n_2}\right)}}$$

اطمینان قلب چاہتے ہو تو حسد سے دور رہو

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Question No: 23 (Marks: 3)
Define moment ratios. In which unit they are expressed?

Answer:- (Page 119)

$$b_1=\frac{(m_3)^2}{(m_2)^3} \quad and \quad b_2=\frac{m_4}{(m_2)^2}$$

They are independent of origin and units of measurement, i.e. they are pure numbers.

ہر چیز کی ایک پہچان ہوتی ہے اور عقلمند کی پہچان غور و فکر کرنا ہے اور غور و فکر کی پہچان خاموشی ہے

اس سے پہلے کہ تمہیں شہوت فتنے میں ڈالے نکاح کر لو

اپنی مرضی اور اللہ کی مرضی میں فرق کا نام غم ہے

Question No: 39 (Marks: 5)

If $n=13, \bar{x}=34, \sigma^2=70, \alpha=0.10$

Test the hypothesis $\mu > 31$

افضل انسان وہ ہے جو اپنی اصلاح کی کوشش کرتا ہے

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Answer:-

$H_0 = \mu = 30$

$H_1 = \mu > 30$

Level of significance α =0.10

α /2=0.05

Critical region=z>1.645

$$z = \frac{\bar{X} - \mu}{\frac{\sigma}{\sqrt{n}}}$$

$$Z = \frac{34-31}{2.32}$$

Z=1.29

Conclusion: Since the value Z=1.29 is less than the value of critical region so we accepted H_0 at 0.10 Level of significance.

FINALTERM EXAMINATION
Fall 2009
STA301- Statistics and Probability (Session - 4)

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اطمینان قلب چاہتے ہو تو حسد سے دور رہو

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Explain the method of Maximum Likelihood in Point Estimation?

Answer:- Page 263

The method of maximum likelihood is regarded as the *MOST important* method of estimation, and is the *most* widely used method. This method was introduced in 1922 by Sir Ronald A. Fisher (1890-1962).The mathematical technique of finding Maximum Likelihood Estimators is a bit *advanced*, and involves the concept of the Likelihood Function.

Question No: 37 (Marks: 5)

The following data was obtained for a randomized block design involving five treatments and three blocks SST=430, SSTR=310, SSB=85, Setup the ANOVA table.

Answer:- (Page 332)

Source	d.f	SS	MS
Between treatments	4	430	107.5
Between Blocks	2	85	42.5
Error	8	310	38.75
Total	14	825	188.75

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Question No: 38 (Marks: 5)

In a Standard Normal Distribution, find:
Mean and Standard Deviation
Lower Quartile
Upper quartile
Inter-quartile range
Mean Deviation

Answer:-

In normal distribution

i. Mean and Standard Deviation

Mean is 0 and S.D is 1

ii. Lower Quartile:

$Q_1 = \mu - 0.6745\sigma$

=0-0.6745(1)

Q_1 **= -0.6745**

iii. Upper Quartile:

$Q_3 = \mu + 0.6745\sigma$

=0.6745

iv. Inter-quartile range

$Q_3 - Q_1/2$ **= 0.6745 - (-0.6745)/2 = 0.6745**

v. Mean Deviation

= 0.7979 σ
= 0.7979(1)
= 0.7979

Question No: 39 (Marks: 5)

If $n = 13, \bar{x} = 34, \sigma^2 = 70, \alpha = 0.10$

Test the hypothesis $\mu > 31$

افضل انسان وہ ہے جو اپنی اصلاح کی کوشش کرتا ہے

Question No: 31 (Marks: 2)

Define normal distribution.

Answer:- (Page 226)

A continuous random variable is said to be normally distributed with mean μ and standard deviation σ if its probability

density function is given by

$$f(x)=\frac{1}{\sigma\sqrt{2\pi}}e^{-\frac{1}{2}\left[\frac{x-\mu}{\sigma}\right]^2}$$

Question No: 32 (Marks: 2)

Fill up the missing values in the formula.

$$n=\frac{\left(_{\alpha/2}\right)^2 \hat{p}\hat{q}}{}$$

جھوٹ رزق کو کھا جاتا ہے

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Answer:- (Page 277)

$$n=\frac{\left(z_{\alpha/2}\right)^2 \hat{p}\,\hat{q}}{e^2}$$

Question No: 33 (Marks: 2)

How many parameters are involved in hyper geometric distribution?

Answer:- (Page 291)

The hyper geometric probability distribution has three parameters N, n and k.

تم اچھا کرو زمانہ تم کو برا سمجھے یہ اس سے بہتر ہے کہ تم برا کرو اور زمانہ تم کو اچھا سمجھے

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Question No: 32 (Marks: 2)

If an automobile is driven on the average no more than 16000 Km per year, then formulate the null and alternative hypothesis.

Answer:- Rep

Question No: 33 (Marks: 2)

Write down the test statistic when chi- square goodness of fit test is performed.

Answer:- (Page 334)

$$\chi^2 = \sum_i \frac{(o_i - e_i)^2}{e_i}$$

Question No: 34 (Marks: 3)

Find the value of F(table value), when $n_1 = 7$, $n_2 = 10$ and $\alpha = 0.05$

Answer:- (Page 316)

F0.05(n1-1, n2-1) = (6,9) =3.37
F0.05(n2-1, n1-1) = (9,6)
V2=6 , v1=8 => 4.15,
V2=6, v1=12 => 4.00
Mean = (4.15+4)/2 = 4.075
Hence value of F0.05(9,6) = 4.075

Question No: 35 (Marks: 3)

If X = 327, n = 634, $p_0 =$ 0.50 then find the z-test statistic for proportion.

Answer:- (Page 289)

$$Z = \frac{X \pm \frac{1}{2} - np_0}{\sqrt{np_0(1-p_0)}}$$

$$np_0 = 634 * 0.50 = 317$$

$$here\ X > np_0\ therefore\ we\ use\ X - \frac{1}{2}$$

$$Z = \frac{X - \frac{1}{2} - np_0}{\sqrt{np_0(1-p_0)}}$$

$$Z = \frac{327 - \frac{1}{2} - 317}{\sqrt{317(1-0.50)}}$$

$$Z = \frac{9.5}{12.58}$$

$$Z = 0.75$$

FINALTERM EXAMINATION
Spring 2010
STA301- Statistics and Probability (Session - 4)

Question No: 31 (Marks: 2)
What is the mean and variance of Poisson distribution?
Answer:- (Page 233)
If the random variable X has a Poisson distribution with parameter μ, then its mean and variance are given by $E(X) = \mu$ and $Var(X) = \mu$.

Question No: 32 (Marks: 2)
Explain the Chi-square test of goodness of fit.
Answer:- (Page 332)
The chi-square test of goodness-of-fit is a test of hypothesis concerned with the comparison of observed frequencies of a sample, and the corresponding expected frequencies based on a theoretical distribution.

Question No: 33 (Marks: 2)
Define level of significance?
Answer:- Rep

Question No: 34 (Marks: 3)
Find the value of F(table value), when $n_1 = 7$, $n_2 = 10$ and $\alpha = 0.05$
Answer:- (Page 316)

Question No: 35 (Marks: 3)
Define Null and Alternative hypothesis.
Answer:- Rep

خوبصورتی علم وادب سے ہوتی ہے لباس و حسن سے نہیں

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Question No: 36 (Marks: 3)
A random sample of 100 is taken from a population with mean 30 and standard deviation 5. The probability distribution of the parent population is unknown, find the mean and standard error of the sampling distribution of $\bar{X}$.

Question No: 37 (Marks: 5)
What is the probability that a poker hand of 5 cards contain exactly 2 aces (hypergeometric distribution)?
Answer:- Rep

Question No: 38 (Marks: 5)
A random sample of size n is drawn from normal population with mean 5 and variance σ^2.
If n=25, s=10 and t=2, what is the values of $\bar{x}$?

Question No: 39 (Marks: 5)
Describe the main steps of General Procedure for Testing Hypothesis.
Answer:- (Page 281)
Step-1:
Formulation of the Null and Alternative Hypotheses:
Step-2:
Decision Regarding the Level of Significance
Step-3:
Test Statistic (that statistic that will enable us to test our hypothesis):
Step-4:
Calculations:
Step-5:
Critical Region (that portion of the X-axis which compels us to reject the null hypothesis):
Step-6:
Conclusion:

Answer:-
The plot of the points in the plane which constitute the graph of a given real function or a pictorial diagram depicting interdependence of variables.

انسان دکھ نہیں دیتے بلکہ انسانوں سے وابستہ امیدیں دکھ دیتی ہیں

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What is the t formula for paired distribution? 3marks.

Answer:- (Page 302)

$$t = \frac{\bar{d} - \mu_d}{s_d / \sqrt{n}}$$

What is the probability that at least one head occurs if a coin tossed 6 times successively? 5 marks

Answer:-

$$P(X = 1) = \binom{6}{1} \cdot \left(\frac{1}{2}\right)^1 \cdot \left(\frac{1}{2}\right)^{6-1}$$

$$= \binom{6}{1} \cdot \left(\frac{1}{2}\right)^1 \cdot \left(\frac{1}{2}\right)^5$$

$$= 3.03$$

8) If E(XY)=7.5, E(X)=2.4 and E(Y)=4.3, calculate covariance of X and Y.

Answer:-

$$Cov(X,Y) = E(XY) - E(X)E(Y)$$
$$= 7.5 - (2.4)(4.3)$$
$$= 7.5 - 10.32$$
$$= -2.82$$

11) Write down the two properties of sampling distribution of proportion p', when the sampling is performed with replacement?

Answer:- (Page 241)

Property 1: $\mu_{\bar{X}} = \mu$

Property 2: In case of sampling with replacement:

$$\sigma_{\bar{X}} = \frac{\sigma}{n}$$

12) What is natural pairing in observations? Give example.

Answer:- (Page 302)

Natural pairing occurs whenever measurement is taken on the same unit or individual at two different times. For example, suppose ten young recruits are given a strenuous physical training programme by the Army. Their weights are recorded before they begin and after they complete the training. The two observations obtained for each recruit i.e. the before-and-after measurement constitute natural pairing. The above is natural pairing.

بدصورت چہرہ بدصورت دماغ سے بہتر ہے

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5 Marks

13) Interpret the concept of five numbers summary and also explain the purpose of five number summaries.

Answer:- (Page 97)

A five-number summary consists of X0,Q1, Median, Q3, and Xm ; It provides us quite a good idea about the shape of
the distribution
If the data were perfectly symmetrical, the following would be true:
The distance from Q1 to the median would be equal to the distance from the median to Q3
The distance from X0 to Q1 would be equal to the distance from Q3 to Xm.
The median, the mid-quartile range, and the midrange would all be equal. All these measures would also be equal to the arithmetic mean of the data

On the other hand, for non-symmetrical distributions, the following would be true:
In right-skewed distributions the distance from Q3 to Xm greatly exceeds the distance from X0 to Q1
in right-skewed distributions,
median < mid-quartile range < midrange:
THE POSITIVELY SKEWED CURVE

14) What is the probability that a poker hand of 5 cards contain exactly 2 aces (hyper geometric distribution)?

Answer:-

$$P(X=2) = \frac{\binom{4}{2}\binom{48}{3}}{\binom{52}{5}}$$
$$= \frac{6 \times 17296}{2598960} = \frac{103776}{2598960} = 0.0399$$

16)From the table given below find the value of chi square

Obvervation Frequency Oij	Expected Frequency Eij
120	100
130	150
80	100
170	150

Answer:

$$Cov(X,Y) = E(XY) - E(X)E(Y)$$
$$= 0.45 - (0.50)(0.90)$$
$$= 0.45 - 0.45$$
$$= 0(\text{Therefore it is independent})$$

STA301- Statistics and Probability

Final Term Examination – Fall 2011

2 Marks

2) If we draw a card from an ordinary deck of 52 cards. Can king and diamond be mutually exclusive events? Give reason to support your answer.

Answer:- (Page 146)

No, because If the two events *can* occur at the same time, they are not mutually exclusive, Therefore, kings and diamonds are not mutually exclusive.

3) Suppose that we toss a fair coin three times. What is its sample space?

Answer:- {(H,H,H),(H,T,H),(H,H,T),(T,H,H),(T,T,H),(T,H,T),(H,T,T),(T,T,T)}

4) Why we take $B_2 = 3$ as the criteria for measuring the kurtosis of any distribution?

Answer:- (Page 228)

For the normal distribution, β2 comes out to be 3, this is why this value has been taken as a criterion for measuring the kurtosis of any distribution.

5) Define level of significance?

Answer:- rep

6) How we decide that the drawn sample is "Small sample" or a "large sample"?

Answer:- Rep

عقل مند اپنے عیب خود دیکھتا ہے اور بیوقوفوں کے عیب دنیا دیکھتی ہے

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3 Marks

7) If mean of a distribution is 0.925 and standard deviation is 0.132. Find out the limits by applying chebychev's inequality for k=2. How much fraction of data will lie between the two limits?

Answer:- (Page 95)

$$\left(\overline{X} - kS, \overline{X} + kS\right)$$
$$\left(0.925 - 2(0.132), 0.925 + 2(0.132)\right)$$
$$(0.925 - 0.264, 0.925 + 0.264)$$
$$(0.661, 1.189)$$

95% of the measurements will fall within these limits.

8) If E(XY)=7.5, E(X)=2.4 and E(Y)=4.3, calculate covariance of X and Y.

Answer:-

$$Cov(X,Y) = E(XY) - E(X)E(Y)$$
$$= 7.5 - (2.4)(4.3)$$
$$= 7.5 - 10.32$$
$$= -2.82$$

Q# 28: can all deciles be expressed as percentile? Explain (2)
Answer: Yes all deciles cab be expressed as percentiles
As the D1 is 10 percent of data and P10 is 10% of data.
D2 is 20% of data whereas in percentile it is P20 and so on …

Q# 29: what is meant by sampling distribution? (2)
Answer: Page 237
The probability distribution of any statistic (such as the mean, the standard deviation, the proportion of successes in a sample, etc.) is known as its sampling distribution.

Q# 30: The department claims that the exceeds Rs. 2500 at the 0.05 level, then formulate null alternative hypothesis?(2)
Answer: Page 283
$H_0 : \mu < 2500$
$H_1 : \mu > 2500$

Q# 31: How we decide that the drawn sample is "Small Sample " or a "Large Sample"?(2)
Answer: rep

Q# 32: If E(X)=0.7 then find E(2X)? (2)
Answer:
$E(2X) = 2E(X)$
$= 2 * 0.7$
$= 1.4$

Q# 33: State the Baye's theorem? (3)
Answer: Page 166
If events A1, A2… Ak form a PARTITION of a sample space S (that is, the events Ai are mutually exclusive and exhaustive (i.e. their union is S)),
and if B is any other event of S such that it can occur ONLY IF ONE OF THE Ai OCCURS, then for any i,

$$P(A_i / B) = \frac{P(A_i)P(B/A_i)}{\sum_{i=1}^{k} P(A_i)P(B/A_i)}$$

Q# 35: "The 95% confidence interval for population mean is 1.3 to 4.7". Interrupt this result (3)
Answer: We are 95% sure that the population mean lies between 1.3 to 4.7

جو لوگوں کے سامنے فخر کرتا ہے وہ لوگوں کی نظروں سے گر جاتا ہے

6- n=24, Mean=33, s=15, x=40.4. Compute t statistic (Marks 3)

7- 90% confidence interval of population mean is 11 to 20. Interpret result (Marks 3)
Answer:- Rep

8- E(XY)=421, E(X)=42, E(Y)=15. Check independence (Marks 3)
Answer:-

$$Cov(X,Y) = E(XY) - E(X)E(Y)$$
$$= 421 - (42)(15)$$
$$= -209$$

It is not independent.

9- Difference between statistics and statistic (Marks 3)
Answer:-
Statistics is the plural of statistic, the science that deals with the collection, classification, analysis, and interpretation of numerical facts or data. While the statistic is a single value or piece of data.

10- Why we call standard deviation the standard error (Marks 2)
Answer:- (Page 240)
The square root of the variance is the standard deviation, and the standard deviation of a sampling distribution is termed as its standard error.

11- if E(Y)=0.5 then find E(10.5+2Y) ... (Marks 2)
Answer:-

$$= E(10.5 + 2Y)$$
$$= 10.5 + 2E(Y)$$
$$= 10.5 + 2 * 0.5$$
$$= 11.5$$

12- What is the meaning of 'b' in Y=a+bX (Marks 2)
Answer:- (Page 121)
b represents the slope of the line

13- Explain level of significance (Marks 2)
Answer:- rep

جو شخص ناکامیوں سے ڈر کر بھاگتا ہے کامیابی اُس سے ڈر کر بھاگتی ہے

STA301- Statistics and Probability

Final Term Examination – Fall 2011

2- Probability of one electric device failure is 0.01. If a sample is chosen of 400, what is probability that exactly 2 are defective (Marks 5)

Answer:- (Page 218)

$$p = 0.01$$

$$q = 1 - p \Rightarrow q = 1 - 0.01 \Rightarrow q = 0.99$$

$$P(X = 2) = \binom{400}{2}(0.01)^2(0.99)^{400-2}$$

$$= 79800 * 0.0001 * 0.02$$

$$= 0.1596$$

4- Two dices are rolled. Find probability that outcome is equal or more than 11. (Marks 5)

Answer:-

$$S = \begin{pmatrix} (1,1) & (2,1) & (3,1) & (4,1) & (5,1) & (6,1) \\ (1,2) & (2,2) & (3,2) & (4,2) & (5,2) & (6,2) \\ (1,3) & (2,3) & (3,3) & (4,3) & (5,3) & (6,3) \\ (1,4) & (2,4) & (3,4) & (4,4) & (5,4) & (6,4) \\ (1,5) & (2,5) & (3,5) & (4,5) & (5,5) & (6,5) \\ (1,6) & (2,6) & (3,6) & (4,6) & (5,6) & (6,6) \end{pmatrix}$$

$$P = (5,6),(6,5),(6,6)$$

$$= \frac{3}{36} = \frac{1}{12} = 0.83$$

5- If X is binomial distribution n=5, p=0.5, q=0.5 then find SD(X) (Marks 3)

Answer:- (Page 214)

$$S.D(X) = \sqrt{npq}$$

$$= \sqrt{5 \times 0.5 \times 0.5} = \sqrt{1.25}$$

$$= 1.12$$

40. Find the coefficient of variation (C.V) for the following price of a commodity.
Price (X): 8, 13, 18, 23, 30

Answer:-

X	X^2
8	64
13	169
18	324
23	529
30	900
$\sum X = 92$	$\sum X^2 = 1986$

$$\overline{X} = \frac{\sum X}{n} = \frac{92}{5} = 18.4$$

$$S = \sqrt{\frac{\sum X^2}{n} - \left(\frac{\sum X}{n}\right)^2}$$

$$S = \sqrt{\frac{1986}{5} - \left(\frac{92}{5}\right)^2}$$

$$S = \sqrt{397.2 - 338.56} = \sqrt{58.64} = 7.66$$

$$C.V = \frac{S}{\overline{X}} \times 100$$

$$C.V = \frac{7.66}{18.4} \times 100 = 41.63\%$$

41. Flaws in plywood occur at random with an average of one flaw per 50 square feet. What is the probability that 32 square feet will have no flaws?

عقل مند کہتا ہے میں کچھ نہیں جانتا جبکہ بے وقوف کہتا ہے کہ میں سب کچھ جانتا ہوں

3. Mathematical expectation of discrete random variable?(3)
Answer:- (Page 179)
In probability theory the expected value (or mathematical expectation) of a random variable is the sum of the product of the values within the range of the discrete random variable and their respective probabilities of occurrence.

$$E(X)=\sum_{i=1}^{n} x_i f(x_i)$$

4.any two properties of mathematical expectation?(2)
Answer:- (Page 202)
The important properties of the expected values of a random variable are as follows:
• If c is a constant, then E(c) = c. Thus the expected value of a constant is constant itself. This point can be understood easily by considering the following interesting example: Suppose that a very difficult test was given to students by a professor, and that every student obtained 2 marks out of 20! It is obvious that the mean mark is also 2. Since the variable 'marks' was a constant, therefore its expected value was equal to itself.
• If X is a discrete random variable and if a and b are constants, then E(aX + b) = a E(X) + b.

5.what s statistical test?(2)
Answer:- (Page 279)
A statistic, which provides a basis for testing a null hypothesis, is called a test-statistic. Every test-statistic has a probability distribution (i.e. sampling distribution) which gives the probability that our test-statistic will assume a value greater than or equal to a specified value OR a value less than or equal to a specified value when the null hypothesis is true.

6. Decide a small sample and large sample?(2)
Answer:-
If the sample size 'n' is less than or equal to 30 (<=30) then it is said to be small sample, and it the sample size is larger than 30 then it is said to be large population.

10.tell the null and alternative hypothesis of 150?(2)
Answer:-
$H_0 = \mu = 150$
$H_1 = \mu \neq 150$

STA301- Statistics and Probability
Final Term Examination - Spring 2012

35. In which condition, Poisson distribution is used to approximate the hyper geometric distribution?
Answer:- (Page 224)
The Poisson distribution can be used to approximate the hyper geometric distribution when $n < 0.05N$, $n > 20$, and $p < 0.05$

36. Elaborate the Least Significant Difference (LSD) test.
Answer:- Rep

37. Write down the formula of combined or pooled proportion of two samples.
Answer:- (Page 290)

$$\bar{p}_c = \frac{n_1 p_1 + n_2 p_2}{n_1 + n_2}$$

38. If approximate value of class interval is 2.96 and range = 14.8 then find the number of classes.
Answer:- (Page 29)

$$Class\,interval = \frac{range}{number\ of\ classes}$$

$$2.96 = \frac{14.8}{number\ of\ classes}$$

$$number\ of\ classes = \frac{14.8}{2.96} = 5$$

جھوٹ انسان اور ایمان دونوں کا دشمن ہے

How many parameters are associated with F- distribution and what is the range of the distribution? (3)
Answer:- (Page 312)
It has two parameters v1 and v2 which are known as the degrees of freedom and it ranging from zero to plus infinity.

Which of the following statement represents continuous data and discrete data? (5)
i) Number of shopes in a plaza. **Discrete data**
ii) Hourly temperature recorded by whether bureau. **Continuous data**
iii) Inches of rainfall in a city. **Continuous data**
iv) Number of passengers carried by rail every year. **Discrete data**
v) Height measurements of boys studying in a college. **Discrete data**

If the population proportions are gives as: P1 = 0.4, P2 = 0.20
find sigma^2 P-hat 1 - P-hat 2 , where n = 12.
Answer:- (Page 256)

$$\sigma_{\hat{p}1-\hat{p}2} = \frac{p_1 q_1}{n_1} + \frac{p_2 q_2}{n_2}$$

$$q_1 = 1 - p_1 \Rightarrow 1 - 0.40 = 0.6$$

$$q_2 = 1 - p_2 \Rightarrow 1 - 0.20 = 0.8$$

$$\sigma_{\hat{p}1-\hat{p}2} = \frac{(0.4)(0.6)}{10} + \frac{(0.20)(0.80)}{10}$$

$$= 0.024 + 0.016$$

$$= 0.04$$

STA301- Statistics and Probability
Final Term Examination - Spring 2012

what are steps involved in statistical research
Answer: (Page 11)
STEPS INVOLVED IN ANY STATISTICAL RESEARCH
- Topic and significance of the study
- Objective of your study
- Methodology for data-collection
  - Source of your data
  - Sampling methodology
  - Instrument for collecting data

زندگی میں کامیابی کا یہی راز ہے کہ پریشانیوں سے پریشان مت بنو

Find the mean and variance for the sampling distribution given below. 5 Marks

$(\hat{p})$	No. of Samples	Probability $f(\hat{p})$
0	1	1/20
1/3	9	9/20
2/3	9	9/20
1	1	1/20
Σ	20	1

Answer:- (Page 247)

$\hat{p}$	No. of samples	$f(\hat{p})$	$\hat{p}.f(\hat{p})$	$\hat{p}^2.f(\hat{p})$
0	1	$\frac{1}{20}$	0	0
$\frac{1}{3}$	9	$\frac{9}{20}$	$\frac{3}{20}$	$\frac{1}{20}$
$\frac{2}{3}$	9	$\frac{9}{20}$	$\frac{3}{10}$	$\frac{1}{5}$
1	1	$\frac{1}{20}$	$\frac{1}{20}$	$\frac{1}{20}$
$\sum$	20	1	$\sum \hat{p}.f(\hat{p}) = \frac{1}{2}$	$\sum \hat{p}^2.f(\hat{p}) = \frac{3}{10}$

$$\mu_{\hat{p}} = \sum \hat{p}.f(\hat{p}) = \frac{1}{2} = 0.5$$

$$\sigma^2_{\hat{p}} = \sum \hat{p}^2.f(\hat{p}) - \left[\sum \hat{p}.f(\hat{p})\right]^2$$

$$= \frac{3}{10} - \left[\frac{1}{2}\right]^2$$

$$= \frac{3}{10} - \frac{1}{4}$$

$$= \frac{1}{20} = 0.05$$

اللہ کا خوف سب سے بڑی دانائی ہے

STA301- Statistics and Probability

Final Term Examination - Spring 2012

1- A sample of size n=3 drawn without replacement experiment from a population N=5 items whose values 0,2,3,6,7 draw possible samples

Answer:-

Sample without replacement = $\binom{N}{n} = \binom{5}{3} = 10$

(0,2,3), (0,2,6), (0,2,7), (0,3,6), (0,3,7), (0,6,7), (2,3,6), (2,3,7), (2,6,7), (3,6,7).

2- Calculate sampling error if sample mean is 102 and population mean is 100

Answer:- (Page 14)

Sampling error $= \overline{X} - \mu$

$= 102 - 100$

$= 2$

3- Define Unbiased estimator

Answer:- (Page 258)

An estimator is defined to be unbiased if the statistic used as an estimator has its expected value equal to the true value of the population parameter being estimated. $E(\hat{\theta}) = \theta$

4- Quartile deviation

Answer:- (Page 84)

The quartile deviation is defined as half of the difference between the third and first quartiles.

$$Q.D = \frac{Q_3 - Q_1}{2}$$

دنیا میں سب سے مشکل کام اپنی اصلاح اور سب سے آسان کام دوسروں پر نکتہ چینی کرنا ہے

STA301- Statistics and Probability

Final Term Examination - Spring 2012

Q1.decribe about significance level

Answer:

The significance level is the criterion used for rejecting the null hypothesis. It show you how likely a result is due to chance. The most frequently used values of α, the significance level, are 0.05 and 0.01, i.e. 5 percent and 1 percent.

Q2 .discuss about center limit theorem

Answer:- (Page 243)

"If a variable X from a population has mean μ and finite variance σ/2, then the sampling distribution of the sample mean−X approaches a normal distribution with mean μ and variance σ2/n as the sample size n approaches infinity."

Q3. What is difference between constant and random variable

Answer:

A variable whose value cannot be changed once it has been assigned a value while those variable whose values changes when we assign value to it.

STA301- Statistics and Probability

Final Term Examination - Spring 2012

Q: Define an Un-Biased estimator? 2 Marks

Answer: Rep

Q: Briefly Explain an experiment design? 2 Marks

Answer:- (Page 320)

By an experimental design, we mean a plan used to collect the data relevant to the problem under study in such a way as to provide a basis for valid and objective inference about the stated problem.

Q: Define an independent and dependent variable in regression? 2 Marks

Answer:- (Page 121)

In regression Y represents the dependent variable and X represents the independent variable

بری صحبت سے تنہائی بہتر ہے اور تنہائی سے نیک صحبت بہتر ہے

STA301- Statistics and Probability

Final Term Examination - Spring 2012

What is the difference between an outcome and an event? (2)

Answer:- (Page 145)

An outcome is a result of a single trial of an experiment while an event is an individual outcome or any number of outcomes.

The mean of a Poisson distribution is 5 while its standard deviation is 4. Comment on it (2)

Answer:- (Page 223)

In Poisson distribution mean and variance are always equal but this statement is not satisfying this property of Poisson distribution.

If an automobile is driven on the average no more than 16000 Km per year, then formulate the null and alternative hypothesis. (2)

Answer:

$H \leq 16000$

$H1 > 16000$

Q: Discuss three properties of normal distribution? 3 Marks

Answer:- (Page 227)

Normal distribution is absolutely symmetrical, hence , μ_3 the third moment about the mean is zero

The normal curve is asymptotic to the x-axis as $x \to \pm \infty$.

For the normal distribution, it can be mathematically proved that $\mu_4 = 3\sigma_4$

Q: The 90% confidence interval for the population mean is 11 to 20, interpret this result? 3 Marks

Answer: - We are 90% sure that our Population mean lie between 11 – 20.

Q: Define LSD test? 3 Marks

Answer:- (Page 330)

According to this procedure, we compute the smallest difference that would be judged significant, and compare the absolute values of all differences of means with it. This smallest difference is called the least significant difference or

LSD. And is given by

$$LSD = t_{\frac{\alpha}{2},(v)}\sqrt{\frac{2(MSE)}{r}}$$

ایماندار کو غصہ دیر سے آتا ہے اور جلدی دور ہو جاتا ہے

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How many parameters are associated with F- distribution and what is the range of the distribution? (3)

Answer:- (Page 312)

It has two parameters v1 and v2 which are known as the degrees of freedom and it ranging from zero to plus infinity.

Which of the following statement represents continuous data and discrete data? (5)

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iii) Inches of rainfall in a city. **Continuous data**

iv) Number of passengers carried by rail every year. **Discrete data**

v) Height measurements of boys studying in a college. **Discrete data**

If the population proportions are gives as: P1 = 0.4, P2 = 0.20
find sigma^2 P-hat 1 - P-hat 2 , where n = 12.

Answer:- (Page 256)

$$\sigma_{\hat{p}1-\hat{p}2} = \frac{p_1 q_1}{n_1} + \frac{p_2 q_2}{n_2}$$

$$q_1 = 1 - p_1 \Rightarrow 1 - 0.40 = 0.6$$

$$q_2 = 1 - p_2 \Rightarrow 1 - 0.20 = 0.8$$

$$\sigma_{\hat{p}1-\hat{p}2} = \frac{(0.4)(0.6)}{10} + \frac{(0.20)(0.80)}{10}$$

$$= 0.024 + 0.016$$

$$= 0.04$$

Made by: Waqar Siddhu

Question No : 49 of 52 Marks: 5 (Budgeted Time 10 Min)

Find quartile deviation for the data given below:
18, 53, 45, 28, 39, 29, 23, 40 and 21

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Question No : 50 of 52 Marks: 5 (Budgeted Time 10 Min)

A population consists of N=5 values 1, 2, 3, 5, 6 A sample size of n=3 is selected from the population without replacement, calculate sampling distribution of sample proportions for even numbers.

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Question No : 51 of 52 Marks: 5 (Budgeted Time 10 Min)

Write down the testing procedure in case of goodness of fit test

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Question No : 52 of 52 Marks: 5 (Budgeted Time 10 Min)

If we have n=634 and $\hat{p}$ =0.459, where $Z_{\frac{\alpha}{2}}$=2.58, then find the 99% confidence interval for population proportion.

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Question No : 45 of 52 Marks: 3 (Budgeted Time 6 Min)

Find the probability of drawing a white ball from a bag containing 4 red, 8 black and 3 white balls.

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Question No : 46 of 52 Marks: 3 (Budgeted Time 6 Min)

Write down the properties of sampling distribution of proportion $\hat{p}$, when sampling is performed *without* replacement.

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Question No : 47 of 52 Marks: 3 (Budgeted Time 6 Min)

If $X = 255$, $n = 500$, $p_s = 0.60$ then find the z-test statistic for proportion.

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Question No : 48 of 52 Marks: 3 (Budgeted Time 6 Min)

What is the impact of degrees of freedom on chi- square distribution?

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Question No : 49 of 52 Marks: 5 (Budgeted Time 10 Min)

Find quartile deviation for the data given below:
18, 53, 45, 28, 39, 29, 23, 40 and 21

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Question No : 50 of 52 Marks: 5 (Budgeted Time 10 Min)

A population consists of N=5 values 1, 2, 3, 5, 6 A sample size of n=3 is selected from the population without replacement, calculate sampling distribution of sample proportions for even numbers.

Made by: Waqar Siddhu

Answer the following questions:

i. Which method has been used for collecting the data in the following case?
"An investigator collects the information personally from the individuals concerned".

i. Find the sampling error when the population mean is 15.785 and sample mean is 15.6.

ii. Write down any two types of nonrandom sampling

iii. What is the angular of strata?

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Question No : 41 of 52 Marks: 2 (Budgeted Time 4 Min)

Write down the name of metho ds/techniques that are used to represent the quantitative discrete data.

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Question No : 42 of 52 Marks: 2 (Budgeted Time 4 Min)

A coin is tossed 900 times and heads appear 490 times. State the null and alternative hypotheses to show that the coin is unbiased.

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Question No : 43 of 52 Marks: 2 (Budgeted Time 4 Min)

Write down the names of two types of experimental designs.

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Question No : 44 of 52 Marks: 2 (Budgeted Time 4 Min)

What are the mean and variance of binomial distribution?

Answer (Please click here to Add Answer)

VuAnswers.com

66-70 / 78

Made by: Waqar Siddhu

Question No : 45 of 52 Marks: 3 (Budgeted Time 6 Min)

Find the probability of drawing a white ball from a bag containing 4 red, 8 black and 3 white balls.

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Question No : 46 of 52 Marks: 3 (Budgeted Time 6 Min)

What are the mean and variance of binomial distribution?

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Question No : 47 of 52 Marks: 3 (Budgeted Time 6 Min)

Find the probability of drawing a white ball from a bag containing 4 red, 8 black and 3 white balls.

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Made by: Waqar Siddhu

Calculate class boundaries from the following data

Age Group	f
20-29	2
30-39	4
40-49	5

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

A certain type of storage battery lasts on the average 3.0 years, with a standard deviation of 0.5 year. Assuming that the battery lives are normally distributed, find the probability that a given battery will last less than 2.3 years.

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

For the Given information, what is your conclusion in testing the indicated null hypothesis?

$n_1 = 13, n_2 = 4, s_1^2 = 6.3, s_2^2 = 15.6, H_0: \sigma_1^2 = \sigma_2^2$ and $H_1: \sigma_2^2 > \sigma_1^2$

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

In a random sample of 200 persons having their lunch at the University cafeteria on meatless day it was observed that 30 percent preferred vegetable dishes Find 95% confidence interval for p

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Answer the following questions:

i. Which method has been used for collecting the data in the following case?
"An investigator collects the information personally from the individuals concerned".
i. Find the sampling error when the population mean is 15.785 and sample mean is 15.6.
ii. Write down any two types of nonrandom sampling
iii. What is the singular of strata?

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Question No : 41 of 52 Marks: 2 (Budgeted Time 4 Min)

Write down the name of methods/techniques that are used to represent the quantitative discrete data.

Answer (Please click here to Add Answer)

VuAnswers.com

Write down critical region for the following hypothesis:

$H_0: \sigma^2 = 20$

$H_1: \sigma^2 < 20$

Where, $\alpha = 0.01$ and $n=10$

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

What is the concept of extrapolation in regression analysis?

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

If Z is a standard normal random variable with mean 0 and variance 1, then find the Lower quartile

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

For the following table we want to test the independence of smoking pattern and marital status. What will be the degrees of freedom for the chi-square test of independence?

Marital Status	Smoking Pattern			Total
	Total self-restraint	Only at times	Regular Smoker	
Single	47	115	74	354

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Find the proportion for the X_1 and X_2, Where $X_1 = 300$ with sample size= $n_1 = 400$ and $X_2 = 200$ with sample size = $n_2 = 300$

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Question No : 50 of 52 Marks: 5 (Budgeted Time 10 Min)

A random sample of size three is drawn without replacement from the population consisting of four numbers 4, 5, 5, 7. Sampling distribution of sample means is calculated as below;

Sample Means $(\bar{X})$	$f(\bar{X})$
14/3	1/4
16/3	2/4
17/3	1/4

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Question No : 51 of 52 Marks: 5 (Budgeted Time 10 Min)

If $n = 1150, x = 450, p = 0.39, H_0 : p_0 = 0.5, and\ \alpha = 0.05$

Test the stated hypothesis

(Use table value of $z = \pm 1.96$*)*

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Question No : 52 of 52 Marks: 5 (Budgeted Time 10 Min)

A personal manager is interested in trying to determine whether absenteeism is greater on some specific day of the week or not? His records for the past year show the following sample distributions.

Day of the week:	Monday	Tuesday	Wednesday	Thursday	Friday
No. of absentees:	66	57	54	48	75

Test goodness of fit

Where test statistic $chi-square = \sum \frac{(o_i - e_i)^2}{e_i} = 7.50$

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

In how many branches, estimation can be divided? Also write down the names of the branches

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

A Sample has following values

101, 99, 111, 199, 150, 140

Find out the maximum likelihood estimate of population mean.

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Write down critical region for the following hypothesis

$H_0 : \sigma^2 = 20$

$H_1 : \sigma^2 < 20$

Where, $\alpha = 0.01$ and $n=10$

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Made by: Waqar Siddhu

Question No : 45 of 52 Marks: 3 (Budgeted Time 6 Min)

In how many ways a three-person committee can be formed from a group of ten persons? (Use the formula)

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Question No : 46 of 52 Marks: 3 (Budgeted Time 6 Min)

From the given data, calculate mean and standard deviation of sampling distribution of mean if the sampling is done with replacement

$N = 120, n = 64, \mu = 50, \sigma = 2$

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Question No : 47 of 52 Marks: 3 (Budgeted Time 6 Min)

Construct 90% confidence interval for the difference in means $\mu_1 - \mu_2$ in case of paired observations, where

$\bar{d} = 1.8,\ s_d = 1.32,\ t_{0.05(9)} = 1.833$

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Question No : 48 of 52 Marks: 3 (Budgeted Time 6 Min)

For a data X : $N(\mu, \sigma^2)$. Two unbiased estimators T_1 and T_2 have following variances

$V(T_1) = \frac{11\sigma^2}{25}$

$V(T_2) = \frac{9\sigma^2}{25}$

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Question No : 49 of 52 Marks: 5 (Budgeted Time 10 Min)

A man travels on car from Lahore to karachi on Motor way in 8 stages of equal intervals. The speed of the car in the various stages was observed to be 110, 116, 120, 114, 115,112, 120, 117 kilometers per hour. Find the average speed at which the car travels.

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Question No : 52 of 52 Marks: 5 (Budgeted Time 10 Min)

Given, $n_1 = n_2 = 16, s_1^2 = 50, s_2^2 = 16$, Construct a 90% confidence interval for the variance ratio σ_1^2/σ_2^2

Answer (Please click here to Add Answer)

VuAnswers.com

regards i have no idea abou F test and this ques in the F test...
remmber me in ur pryaer after 3 hr slove 1 paper.. :)

Made by: Waqar Siddhu

Question No : 41 of 52 Marks: 2 (Budgeted Time 4 Min)

Describe the Poisson distribution as the limiting form of the binomial distribution.

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Question No : 42 of 52 Marks: 2 (Budgeted Time 4 Min)

Define Disjoint Sets.

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Question No : 43 of 52 Marks: 2 (Budgeted Time 4 Min)

What is acceptance region?

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Question No : 44 of 52 Marks: 2 (Budgeted Time 4 Min)

If there are K treatments and R rows in a Randomized Complete Block Ddesign then calculate the total number of experimental units used.

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Question No : 45 of 52 Marks: 3 (Budgeted Time 6 Min)

In how many ways a three-person committee can be formed from a group of ten persons? (Use the formula)

Answer (Please click here to Add Answer)

VuAnswers.com

Question No : 47 of 52 — Marks: 3 (Budgeted Time 6 Min)

If X = 341, n = 634, $p_0 = 0.50$ then find the z-test statistic for proportion.

Answer (Please click here to Add Answer)

VuAnswers.com

Step 3:
Test statistic:

$$Z = \frac{X \pm \frac{1}{2} - n\,p_0}{\sqrt{n\,p_0(1-p_0)}}$$

Step 4:
Computation:

Since np0 = 634 (0.50) = 317
and X = 341
Hence X > np0 so use X - ½

page 289

$$\text{So} \quad Z = \frac{341 - \frac{1}{2} - 317}{\sqrt{634(0.50)(0.50)}} = \frac{23.5}{12.59}$$

$$= 1.87$$

Made by: Waqar Siddhu

Question No : 48 of 52 — Marks: 3 (Budgeted Time 6 Min)

A random sample of size n is drawn from normal population with mean 5 and variance σ^2
If $\bar{x}$=2.5, $\bar{x}$ =7and t=3, then what is the values of n?

Answer (Please click here to Add Answer)

VuAnswers.com

The test-statistic to be used is

$$t = \frac{\bar{X} - \mu_0}{s/\sqrt{n}}$$

kare mue = 5...

ider uder lai aj ker laiana now. n ko

ans shid 1.92 ai ga aprox 2 i htink
not sure :) becoz stat ae :p

Made by: Waqar Siddhu

Question No : 49 of 52 — Marks: 5 (Budgeted Time 10 Min)

A random variable X is normally distributed with $\mu = 50$ and $\sigma^2 = 25$. Find the probability of X larger than 54.

Answer (Please click here to Add Answer)

VuAnswers.com

The test-statistic to be used is

$$Z = \frac{\bar{X} - \mu_0}{\text{sigma}}$$

kare give sigma sqr, take under root

sigma= 5 mue alsi give and X= 54 us find X>54

(54-50)/5= 4/5

its half ques see
these type of ques
70 % slove now.. 30
% see table etc

Made by: Waqar Siddhu

Question No : 50 of 52 — Marks: 5 (Budgeted Time 10 Min)

Find the coefficient of variation (C.V) for the following price of a commodity
Price (X): 8, 13, 18, 23, 30

Answer (Please click here to Add Answer)

VuAnswers.com

COEFFICIENT OF VARIATION

$$C.V. = \frac{S}{\bar{X}} \times 100$$

Shortcut Formula for Ungroup data

$$S = \sqrt{\left(\frac{\sum x^2}{n}\right) - \left(\frac{\sum x}{n}\right)^2}$$

mean ka farmula laga laian X bar ki
jaga.... =X/n
small n is 5

Made by: Waqar Siddhu

Question No : 51 of 52 — Marks: 5 (Budgeted Time 10 Min)

The given data is $n = 1150, x = 450, p = 0.39, H_0 : p_0 = 0.3, \alpha = 0.01$

Test the stated hypothesis. *(Use table value of z = ±2.58)*

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Question No : 52 of 52 — Marks: 5 (Budgeted Time 10 Min)

Given, $n_1 = n_2 = 16, s_1^2 = 50, s_2^2 = 16$, Construct a 90% confidence interval for the variance ratio σ_1^2/σ_2^2

Answer (Please click here to Add Answer)

VuAnswers.com

regards i have no idea abou F test and this ques in the F test...
remmber me in ur pryaer after 3 hr slove 1 paper.. :)

Answer (Please click here to Add Answer)

VuAnswers.com

test :
A hypothesis test in which rejection of the null hypothesis occurs for values of the test statistic in either tail of the sampling distribution.

Made by: Waqar Siddhu

Question No : 43 of 52 Marks: 2 (Budgeted Time 4 Min)

For a sample data n = 15, calculate $t_{\frac{\alpha}{2}(v)}$ for $\alpha = 0.10$.

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Question No : 44 of 52 Marks: 2 (Budgeted Time 4 Min)

Suppose we want to determine the proportions of smokers and non smoker in a city? In this situation what type of distribution we can use?

Answer (Please click here to Add Answer)

VuAnswers.com

following proportions, we are dealing with a BINOMIAL situation:
- **Proportion of smokers in a city smoker → success, non-smokers → failure.**
- **Proportion of literates in a community → literacy rate, literate → success, illiterate → failure.**
- **Proportion of males in a city → *sex ratio*).**

Made by: Waqar Siddhu

Question No : 45 of 52 Marks: 3 (Budgeted Time 6 Min)

If mean of a distribution is 20 and standard deviation is 2. Find out $\mu \pm 2\sigma$ limits by applying empirical rule. What percent of data will lies between these two limits?

Answer (Please click here to Add Answer)

VuAnswers.com

calculate app keroo hun

According to this empirical rule:
- **Approximately 68% of the measurements will fall within 1 standard deviation of the mean, i.e. within the interval (−X − S, −X + S).**
- **Approximately 95% of the measurements will fall within 2 standard deviations of the mean, i.e. within the interval (−X − 2S, −X + 2S).**
- **Approximately 100% (practically all) of the measurements will fall within 3 standard deviations of the mean, i.e. within the interval (−X − 3S, −X + 3S).**

Made by: Waqar Siddhu

Question No : 46 of 52 Marks: 3 (Budgeted Time 6 Min)

Suppose X is a random variable having Poisson distribution with its parameter value 3, find value of P(X=1).

Answer (Please click here to Add Answer)

VuAnswers.com

The Poisson distribution has only one parameter μ > 0.

calculate easily now..

μ=3 X=1)

$$\lim_{\substack{n\to\infty \\ p\to 0}} b(x;n,p) = \frac{e^{-\mu}\mu^x}{x!}, \quad x = 0,1,2,\ldots,\infty$$

where e = 2.71828. & p is 0.05 or less, n is 20 or more.

Made by: Waqar Siddhu

Question No : 47 of 52 Marks: 3 (Budge

If X = 341, n = 634, p_0 = 0.50 then find the z-test statistic for proportion.

Start Time: 9:48 AM

Made by: Waqar Siddhu

Find the coefficient of standard deviation from the following data
Life in Hours (X): 130, 150, 180, 250, 345

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Start Time: 9:48 AM

What is the probability that a poker hand of 5 cards contain (i) exactly 2 aces (ii) exactly 1 ace?
(Use hypergeometric distribution)

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Start Time: 9:48 AM

If $n=22$, $\sum(d-\bar{d})^2 = 270, \bar{d} = 4$

Then, using a 0.05 level of significance level, test the hypothesis $H_0: \mu_d = 0$ against $H_1: \mu_d \neq 0$

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Start Time: 9:48 AM

A company launched new layout of its website. After a survey, 62 of 115 visitors liked the new layout while 59 of 135 visitors liked the old layout of the website. Company claims that new layout did not improve the visitor's liking about the website.
By using the critical value $Z < -Z_{0.05} = -1.645$, verify the company's claim.

$H_0: P_1 - P_2 \geq 0$

$H_1: P_1 - P_2 < 0$

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Start Time: 9:48 AM

Question No : 41 of 52 Marks: 2 (Budgeted Time 4 Min)

Name the measures of dispersion that are not based on all the values.

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Question No : 42 of 52 Marks: 2 (Budgeted Time 4 Min)

When we use two-tailed test?

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Why the median is suitable average for the below data set? Explain.

Monthly income (in rupees)	No. of workers
Less than 2000/-	100
2000/-to 2999/-	300

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

(in rupees)	
Less than 2000/-	100
2000/-to 2999/-	300
3000/- to 3999/-	500
4000/- to 4999/-	250
5000/- and above	50

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

If Z is a standard normal random variable with mean 0 and variance 1, then find the Lower quartile.

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Write down critical region for the following hypothesis at 5% level of significance.

$H_0 : \mu = 75$

$H_1 : \mu < 75$

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

The manager of a bottling plant is anxious to reduce the variability in net weight of fruit bottled. Over a long period, the standard deviation has been 15.2 gm. A new machine is introduced and the net weights (in grams) in 10 randomly selected bottles (all of the same nominal weight) are 987, 966, 955, 977, 981, 967, 975, 980, 953, and 972.
State null and alternative hypothesis that machine has a better performance? Also write down test-statistics about the hypothesis.

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Find the coefficient of standard deviation from the following data
Life in Hours (X): 130, 150, 180, 250, 345

Question No : 49 of 52 Marks: 5 (Budgeted Time 10 Min)

Answer the following question using the given stem and leaf plot of the ages of the people who attended a musical event.

Stem	Leaf
1	2 2 3 3 4 4 5 5 5 5 5 5 6 6 6 6 6 6 7 7 7 7 7 8 8 9 9
2	3 3 4 8
3	6

VuAnswers.com

Answer (Please click here to Add Answer)

Made by: Waqar Siddhu

Question No : 49 of 52 Marks: 5 (Budgeted Time 10 Min)

2	3 3 4 8
3	6
4	5 8

a) How many people attended the event?
b) What is the age of youngest attendee?

VuAnswers.com

Answer (Please click here to Add Answer)

Made by: Waqar Siddhu

Question No : 49 of 52 Marks: 5 (Budgeted Time 10 Min)

a) How many people attended the event?
b) What is the age of youngest attendee?
c) What was the age of oldest person attending event?
d) Which age group was more widely represented?
e) How many people were above 30?

VuAnswers.com

Answer (Please click here to Add Answer)

Made by: Waqar Siddhu

Question No : 50 of 52 Marks: 5 (Budgeted Time 10 Min)

If $\bar{X}$ is normally distributed with $\mu_{\bar{x}} = \mu = 24000$ and $\sigma_{\bar{x}} = 412.20$

then find out the $P(\bar{X} > 24500)$

VuAnswers.com

Answer (Please click here to Add Answer)

Made by: Waqar Siddhu

Question No : 51 of 52 Marks: 5 (Budgeted Time 10 Min)

If we have $\bar{X} = 15$ and $\sum_{i=1}^{n}(X_i - \bar{X})^2 = 56$

Then, find the 90% confidence interval for population variance (σ^2).

VuAnswers.com

Answer (Please click here to Add Answer)

Made by: Waqar Siddhu

Question No : 52 of 52 Marks: 5 (Budgeted Time 10 Min)

A research worker wishes to estimate the mean of a population using a sample sufficiently large that the probability will be 0.95 that the sample mean will not differ from the true mean by more than 25 percent of the standard deviation. How large a sample should be taken?

VuAnswers.com

Answer (Please click here to Add Answer)

Made by: Waqar Siddhu

Made by: Waqar Siddhu

Question No : 45 of 52 Marks: 3 (Budgeted Time 6 Min)

Write a short note on Quota Sampling.

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Question No : 46 of 52 Marks: 3 (Budgeted Time 6 Min)

Write down the properties of hypergeometric distribution.

Answer (Please click here to Add Answer)

VuAnswers.com

The probability of success changes on each trial.
- The successive trials are not independent.
- The experiment is repeated a fixed number of times.

Made by: Waqar Siddhu

Question No : 47 of 52 Marks: 3 (Budgeted Time 6 Min)

Write down critical region for the following hypothesis at 5% level of significance

$H_0 : \mu = 75$

$H_1 : \mu < 75$

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Question No : 48 of 52 Marks: 3 (Budgeted Time 6 Min)

For the following table we want to test the independence of smoking pattern and marital status. What will be the degrees of freedom for the chi-square test of independence?

Marital Status	Smoking Pattern: Total self-restraint	Only at times	Regular Smoker	Total
Single	67	513	78	658
Married	411	633	129	1173
Widowed	85	51	7	143
Divorced	27	60	15	102
Total	590	957	225	1772

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Question No : 49 of 52 Marks: 5 (Budgeted Time 10 Min)

Answer the following question using the given stem and leaf plot of the ages of the people who attended a musical event.

Stem	Leaf
1	2 2 3 3 4 4 5 5 5 5 5 5 6 6 6 6 6 6 7 7 7 7 7 8 8 9 9
2	3 3 4 8
3	6

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Question No : 41 of 52 Marks: 2 (Budgeted Time 4 Min)

Is there any difference between distribution function and cumulative distribution function of discrete r.v. X?

Answer (Please click here to Add Answer)

VuAnswers.com

The distribution function of a random variable X, denoted by F(x), is defined by F(x) = P(X < x).
The function F(x) gives the probability of the event that X takes a value LESS THAN OR EQUAL TO a specified value x. The distribution function is abbreviated to *d.f.* and is also called the *cumulative distribution function (cdf)* as it is the cumulative probability function of the random variable X from the smallest value upto a *specific* value x.
Let us illustrate this concept with the help of the same example that we have been considering — that of the probability distribution of the sum of the dots when two fair dice are thrown.

Made by: Waqar Siddhu

Question No : 42 of 52 Marks: 2 (Budgeted Time 4 Min)

What is meant by sampling distribution of sample proportion?

Answer (Please click here to Add Answer)

VuAnswers.com

The probability distribution of any statistic (such as the mean, the standard deviation, the proportion of successes in a sample, etc.) is known as its sampling distribution.

The sample proportion has different values in different samples.

Made by: Waqar Siddhu

Question No : 43 of 52 Marks: 2 (Budgeted Time 4 Min)

If an automobile is driven on the average no more than 16000 Km per year then formulate the null and alternative hypothesis

Answer (Please click here to Add Answer)

VuAnswers.com

Made by: Waqar Siddhu

Question No : 44 of 52 Marks: 2 (Budgeted Time 4 Min)

While applying the chi-square goodness of fit test, if an expected frequency in any category is less than 5, then what we do to solve the problem.

Answer (Please click here to Add Answer)

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Made by: Waqar Siddhu

Question No : 45 of 52 Marks: 3 (Budgeted Time 6 Min)

Write a short note on Quota Sampling

Answer (Please click here to Add Answer)

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Question No : 46 of 52 Marks: 3 (Budgeted Time 6 Min)

Write down the properties of hypergeometric distribution

Answer (Please click here to Add Answer)

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GOOD LUCK

REMEMBER ME IN YOUR PRYAERS