Paper 1
FINALTERM EXAMINATION
Fall 2009
MTH302- Business Mathematics & Statistics

Time: 120 min
Marks: 80

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

In regression analysis, when we plot the values of dependent and independent variables, the resulting set of points is called

► Scatter Diagram

► Venn diagram

► Histogram

► Pie Graph
http://en.wikipedia.org/wiki/Scatter_plot

Question No: 2   (Marks: 1) - Please choose one
If all the points in the scatter diagram seem to lie near a line, the correlation is said to be

► Quadratic

► Linear

► Positive

► Negative
If the points plotted on the Scatter Diagram are randomly scattered, ... that the two sets of measurements have no correlation and cannot be said to be related in any way. ... In a perfect correlation, all points lie on a straight line. ...

Question No: 3   (Marks: 1) - Please choose one

Equation of line having slope 0 and passing through the point A (0, 1) is

► Y =1

► Y-1= X

► X=1

► X-1= 2(Y+1)

A(0,1) then y=1+0x then y=1

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

If the price of an English novel decreases from Rs 255.50 to Rs 230.25. What is the percentage decrease?

► 8.9 %

► 9.9 %

► 10.9%

► 11.9 %

Ref: Change = Final value-initial value
Change = 255.50-230.25=25.25
So percentage change = (change/initial value)*100%
Percentage change = (25.25/230.25)*100 =10.9%
Question No: 5   (Marks: 1) - Please choose one

A statistical measure of the variability of a distribution around its mean is referred to as

► A probability distribution

► The standard deviation correct

► The expected return

► Coefficient of variation

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

What is the interest on Rs. 1600 for one year at the rate 3 ½ %?

► 65

► 56

► 75

► 90

Ref: rate= 0.035 so 1600*0.035=56

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

If the CORRELATION function returns the #DIV/0 ! error value, what is the possible reason of the error?

► Array1 and Array2 have different number of data points.

► Either Array1 or array2 is empty.

► Array or reference argument contains text, logical values or empty cells.

► The arguments are names, arrays, or references that contain numbers.

Ref: page 216

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

The measure of how well the regression line fits the data is the:

► **coefficient of determination**

► slope of the regression line

► mean square error

► standard error of the regression coefficient

Ref: http://stat.wharton.upenn.edu/~liewang/102/Lecture5.pdf see page 20 in this link

Question No: 9   (Marks: 1) - Please choose one

Evaluate $^5p_3$

   ► 60

   ► 30

   ► 40

   ► 50

Ref: $^5p_3 = 5! / (5-3)!$

$^5p_3 = 5! / 2! = 5*4*3*2! / 2! = 5*4*3 = 60$

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

Three fair dice are thrown. The probability of a total score of 6 is

   ► 0.032

   ► 0.014

   ► 0.046

   ► 0.005

Ref=The only way I can do this one is by counting the number of ways we can get the total to be 3, 4, 5, 6, 7, or 8, and then use 216 as denominator (since the three dice can land in 6*6*6 different ways).

1 1 1

1 2 1 three times [the 2 can be in any position]

1 2 2 three times [the 1 can be in any position]

1 1 3 three times

1 1 4 three times

1 2 3 six times

1 1 5 three times

1 2 4 six times

1 3 3 three times

1 1 6 three times

1 2 5 six times

1 3 4 six times

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

The method of moving averages is used for what purposes?

▶ It is used to plot a series.

▶ It is used to exponentiate a series.

▶ It is used to smooth a series.

▶ It is used in regression analysis.

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

Aalia received 2 A's and 2 B's in her college courses. What is her grade point average? Assume each course is 3 credits. A = 4, B = 3, C = 2, D = 1

▶ 3.0

▶ 3.2

▶ 3.3

▶ 3.5

Ref: 2 A grades =4*2=8 and 2B grades = 3*2 =6 no or n=4 and grade point avg =8+6/4=3.5

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

Under which of the following conditions would the standard deviation assume of negative value.

► When all the data values were negative

► When more than half of the data values were negative.

► If all the data values were the same.

► The standard deviation cannot be negative.

Ref: Standard deviation is always positive can not be negative

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

If sign of r is negative then it indicates

► Direct <u>relationship between X</u> & Y

► Indirect relationship between X & Y

► X & Y equal

► X & Y are square

<u>indirect mean negative correlation</u>

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

If you invest some amount at an interest rate of 8%, then at the end of 9 years.
What will be the value of Accumulation Factor?

► 12.736

► 12.487

► 12.965

► 12.856

Ref: $[(1+r)^n-1]/ r$ r = 8% or 0.08 n = 9

$[(1+0.08)^9-1]/ 0.08 = [(1.08)^9-1]/ 0.08 = (1.9990-1)/0.08$

$0.9990/0.08 = 12.487$

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

Evaluate $(x-y)^4$

► $-x^4 +4x^3 y -6 x^2 y^2 +4 x^1y^3 -y^4$

► **$x^4 -4x^3 y +6 x^2 y^2 -4 x^1y^3 +y^4$**

► $x^4 -4x^3 y +6 x^2 y^2 -4 x^1y^3 +y^5 +y^4$

► $x^4 -4x^3 y +6 x^2 y^2 -4 y^3 +y^4$

Sol: $(x-y)^4$ we can write this $(x-y)^4 =(x-y)^2(x-y)^2$ we know that $(a+b)^2 = a^2 + b^2 +2ab$

$(x-y)^4 =(x-y)^2 * (x-y)^2= x^4+x^2y^2-2x^3y+x^2y^2+y^4-2xy^3-2x^3y-2x^3y+4x^2y^2$

$(x-y)^4 =(x-y)^2(x-y)^2 = x^4 -4x^3 y +6 x^2 y^2 -4 x^1y^3 +y^4$

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

The moving averages represent ------------------

► **Time series variations**

► Co-efficient of variations

► Statistical Dispersion

► Absolute deviation

Question No: 18   (Marks: 1) - Please choose one

Twelve randomly-chosen students were asked how many times they had missed class during a certain semester, with this result: 2, 1, 5, 1, 1, 3, 4, 3, 1, 1, 5, 18. For this sample, the geometric mean is

► **2.376**

► 2.158

► 1.545

► Impossible to calculate

Ref: n =12

Question No: 19   (Marks: 1) - Please choose one

The median of the following data:

2, 3, 5 6, 7, 3, 7 is -----------------

- ► 3

- **► 5**

- ► 6

- ► 7

Sol array data 2,3,3,5,6,7,7 so data is even so median is 5

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

If the standard deviation of a population is 9, the population variance is:

- ► 3

- ► 9

- ► 21.35

- **► 81**

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

The -------------- is a statistical term that represents the central or midpoint of a series of numbers.

► mean

► mode

► range

► median

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

The moving averages of the Prices   50,60,70,80   are

► 50,60

► **60,70**

► 70,80

► 65,65

sol:

Moving avg

50

60   50+60+70/3=60

70   60+70+80/3=70

80

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

In the equation   the formula to calculate b is

► **b= n$\sum$xy -$\sum$x$\sum$y / n$\sum$x^2 – ($\sum$x)^2**

► b= n$\sum$xy -$\sum$x$\sum$y / $\sum$x^2 – ($\sum$x)^2

► b= n$\sum$xy -$\sum$x$\sum$y / n$\sum$x^2 – ($\sum$x)

► b= $\sum$xy -$\sum$x$\sum$y / n$\sum$x2 – ($\sum$x)2

Ref see page 222

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

If **Original Price** = Rs. 3120 and **Markdown Rate = 6.3 %** then the **Sale Price** is equal to

► **2933.44**

► 3033.2

► 2910.4

► 3316.56

Sol: sale price = original or current price (1-%markdown)
Sale price = 3120 (1-6.3%) =2933.44
See page 103

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

Net price =

► List price +trade discount

► List price - trade discount 104

► List price /trade discount

► List price * trade discount

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

If I is an identity matrix then it must also be a

► **rectangular matrix**

► row matrix

► column matrix

► scalar matrix

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

	C	D	E	F	G
1					
2					
3					
4					
5			239		
6			245		
7			250		
8			255		
9			249		
10			261		
11			241		
12			231		
13					
14					
15					

To find average of numbers given in figure ,one can apply the excel formula

► =AVERAGE(E12:E13)

► **=AVERAGE(E5:E12)**

► =SUMIF(E5:E12)

► =DSUM(E5:E12)

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

For graphing univariate data we use

► Pie charts,Bar charts .

► Pareto diagrams.

► Side by side chart .

► Both (1) & (2)
Ref:183

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

The ratio of the standard deviation of a distribution to the mean of that distribution is referred to as

► a probability distribution.

► the expected return.

► the standard deviation.

► **coefficient of variation.**

Ref: C.V = S.D/Mean*100

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

Seasonal variation = ….

► **Actual – trend** **Ref 252**

► Actual + trend

► Actual * trend

► Actual / trend

Question No: 31   (Marks: 1) - Please choose one

An estimated regression line of Y on X is

► ŷ =a –b X

► ŷ =a +b /X

► **ŷ =a + b X** 229

► ŷ =a + X/b

Question No: 32   (Marks: 1) - Please choose one

A regression equation was computed to be Y = 35 + 6X, the value of 35 indicates that

► An increase in one unit of X will result in an decrease of 35 in Y

► The coefficient of correlation is 35

► The coefficient of determination is 35

► The regression line crosses the Y-axis at 35

Question No: 33   (Marks: 1) - Please choose one

How many types of measure of dispersion

► 2

► 3

► 4

► 5

Ref: http://www.emathzone.com/tutorials/basic-statistics/measures-of-dispersion.html

There are two types of measure of dispersion which are:
(a) **Absolute Measure of Dispersion**
(b) **Relative Measure of Dispersion**

Question No: 34   (Marks: 1) - Please choose one

The possible range of values for Karl Pearson's correlation coefficient r is

► 0 to 1

► -1 to 0

► – infinity to infinity

► -1 to 1

The most widely-used type of correlation coefficient is Pearson r (Pearson, ... distances of all the data points from the line is the lowest possible. ... Pearson Curves. A system of distributions proposed by Karl Pearson (e.g., ... will always produce predicted values (predicted y's) in the range of 0 to 1. ...

Question No: 35   (Marks: 1) - Please choose one

Badri has 9 pairs of dark Blue socks and 9 pairs of Black socks. He keeps them all in a same bag. If he picks out three socks at random what is the probability he will get a matching pair?

► (2*9C2 * 9C1) / 18C3

► (9C2 * 9C1) / 18C3

► 1

► 0

Question No: 36   (Marks: 1) - Please choose one

If A=[1 2 3 4] then to find the product AB, the number of rows of the matrix B should be................

► atleast 4

► atmost 4

► exactly 4

► one

Question No: 37   (Marks: 1) - Please choose one

When a straight line is fitted to time series data, it is called

► Linear equation

► Linear regression

► **Linear trend**

► Non-Linear equation

Once it has been decided to fit a straight line, there are various ways ... and a trend line is fitted through the data, the chances of a truly zero ... To analyse a (time) series of data, we assume that it may be represented as trend plus noise: ... then the non-stationary series {yt } is called trend stationary. ...

Question No: 38   (Marks: 1) - Please choose one

*………..*is a deduction from the list price of goods provided by a business in return for payment within a specified time.

► **trade discount**

► cash discount

► credit discount

► none of these

Question No: 39   (Marks: 1) - Please choose one

Net cash flow is defined as the difference between

► **Revenue and cost price** 124

► Revenue and list price

► Revenue and sale price

► None of these

Question No: 40   (Marks: 1) - Please choose one

Which method of trend analysis is useful for data not having a pronounced trend or seasonality?

► multiplicative model

► decomposition model

► ratio-to-moving average method

► **exponential smoothing method**
is therefore a frequently used method for trend analysis in hy- drological and hydrochemical time ... avoid bias in trends due to seasonality in data the trends are ... tration in the Gulf of Riga having significantly lower silica con - .... decade to DSi time series resulted in less pronounced down- ward trends for ...

Question No: 41   (Marks: 2)

If you toss a die and observe the number of dots that appears on top face then write the events that the odd number occurs.

Question No: 42   (Marks: 2)

Define frequency with example

Question No: 43   (Marks: 2)

Describe the significance of Chi-Square distribution?

Question No: 44   (Marks: 3)

Find the number of ways to arrange in a row:
     a)   5 people
   b)6 people

Question No: 45   (Marks: 3)

Explain the difference between Binomial distribution and negative binomial distribution with the help of an example.

Question No: 46   (Marks: 3)

What is the difference between median and mode? Explain with the help of and example

Question No: 47   (Marks: 5)

Three horses A, B, C are in a race; A is twice as likely to win as B, and B is twice likely to win as C then find the probability that B or C wins.

Question No: 48   (Marks: 5)

Find trimmed mean of following data
8.1, 8.2, 8.3, 8.4, 8.5, 8.6

Question No: 49   (Marks: 5)

A coin is tossed 10 times. What is the probability that exactly 6 heads will occur?

Question No: 50   (Marks: 10)

The following data gives the height (in inches) of eleven 9-years old boys in a primary school.
57, 52, 51, 49, 55, 54, 50, 48, 53, 56, 47

   a)   Find first, second and third quartiles.
   b)   Find interquartile range, Quartile deviation.

Time: 120 min
Marks: 80

Question No: 1   (Marks: 1)   - Please choose one
The rate of change along the regression line is called

► **Linear regression**

► **Non Linear regression**

► **Slope**
► **Curve**

Question No: 2   (Marks: 1)   - Please choose one
A relationship between variables that can be represented by a straight line equation is

► **Non linear regression model**

► **Non linear equation**

► **Simple linear regression model**
► **Population regression model**
See page 206

Question No: 3   (Marks: 1)   - Please choose one
If the standard deviation of a population is 9, the population variance is
► 3
► 9
► 21.35
► 81

Question No: 4   (Marks: 1)   - Please choose one
A college has 10 basketball players. A 5-member team and a captain will be selected out of these 10 players. How many different selections can be made?
► 1260
► 210
► 10C6 * 6!
► 10C5 * 6
Ref= selected = 5 member team and a captain total selected = 6

So 10c6 = 210

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

The measure of how well the regression line fits the data is the:
- ► coefficient of determination
- ► **slope of the regression line**
- ► mean square error
- ► standard error of the regression coefficient

Question No: 6   (Marks: 1)   - Please choose one
When there is no linear correlation between two variables, what will the value of r be?

- ► -1
- ► +1
- ► **0**
- ► a very small negative number

Ref= see page 210 in case 2

Question No: 7   (Marks: 1)   - Please choose one
What is the probability of choosing a vowel from the alphabet?
- ► **21/26**

- ► **5/26**

- ► **1/21**

- ► **2/21**

Ref total alphabet = 26 vowel = 5 so by definition: favourable / total =5/26

Question No: 8   (Marks: 1)   - Please choose one
What is the probability of scoring 11 when you roll two dice?
- ► **1/18**

- ► **2/18**

- ► **1/36**

- ► **3/18**

Ref S = { (1, 1), (1, 2), (1, 3), (1, 5), (1, 6),

(2, 1), (2, 2), (2, 3), (2, 5), (2, 6),

(3, 1), (3, 2), (3, 3), (3, 5), (3, 6),

(4, 1), (4, 2), (4, 3), (4, 5), (4, 6),

(5, 1), (5, 2), (5, 3), (5, 5), (5, 6),

(6, 1), (6, 2), (6, 3), (6, 5), (6, 6) }

Total=36 scoring 11 = (5,6)(6,5) so 2/36=1/18

Question No: 9   (Marks: 1)   - Please choose one
 Which is incorrect?

> ► The mode is a measurement that records value

> ► <mark>A bar graph is same as line graph</mark>
> ► A mean may cause distortions
> ► A circle graph is based on 360∞

   See page 161 and 162

Question No: 10   (Marks: 1)   - Please choose one
 The variance is
> ► Found by dividing by *N* by the mean.
> ► In the same units as the original data.
> ► <mark>Found by squaring the standard deviation</mark>
> ► Calculate by dividing the S.D. with mean

 See page 200

Question No: 11   (Marks: 1)   - Please choose one
 A scatter diagram is a chart
> ► In which the independent variable is scaled along the vertical axis.

> ► In which the dependent variable is scaled along the horizontal axis.

> ► <mark>That portrays the relationship between two variables.</mark>

> ► Dependent and independent variables are always directly proportional

Ref= http://en.wikipedia.org/wiki/Scatter_diagram also see page 206

Question No: 12   (Marks: 1)   - Please choose one
 How many words can be formed by re-arranging the letters of the word ASCENT such that A and T occupy the first and last position respectively?
> ► 5!
> ► <mark>4!</mark>
> ► 6! - 2!
> ► 6! / 2!

 ref= A and t occupy first and last position so remaining(SCEN) 4!

Question No: 13   (Marks: 1)   - Please choose one
 Four dice are rolled simultaneously. What is the number of possible outcomes in which at least one of the die shows 6?
> ► 6! / 4!
> ► 625
> ► <mark>671</mark>
> ► 1296

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

Evaluate ^nC_n

► n

► **one**
► Zero
► ^nP_r

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

Twelve randomly-chosen students were asked how many times they had missed class during a certain semester, with this result: 2, 1, 5, 1, 1, 3, 4, 3, 1, 1, 5, 18. For this sample, which measure of central tendency is least representative of the "typical" student?

► Mean
► Median
► **Mode**

► Midrange

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

If the regression equation is equal to 23.6 - 54.2X, then 23.6 is the _____ while -54.2 is the _____ of the regression line.
► slope, intercept
► **intercept, slope**
► slope, regression coefficient
► radius, intercept

Ref: intercept = a, slope and regression coefficient=b so line is y= a + bx

Question No: 18   (Marks: 1)   - Please choose one

If A and B are two mutually exclusive events, then

► $P(A \cup B) = P(A).P(B)$
► $P(A \cap B) = P(A)+P(B)$
► **$P(A \cup B) = P(A)+P(B)$**
► $P(A \cup B \cup C) = P(A)+P(B)$

Question No: 19   (Marks: 1)   - Please choose one

Principal remains constant through out the agreement period in:
► Compound interest

► Annuity
► **Simple interest**
► Nominal interest

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

The mode of the words in the word CORRELATION is

► L

► R
► O
► **Both R and O**

Question No: 21   (Marks: 1)   - Please choose one
The minimum number of points required to calculate the intercept of a straight line is/are
► one
► **two**
► three
► one or threee

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

$3x^2 + 5x - 7$ is --------------   expression.

► Monomial
► Binomial
► **Trinomial**
► Linear

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

$A = \begin{bmatrix} 2 & 6 \\ 3 & 4 \end{bmatrix}$ $B = \begin{bmatrix} 1 & 9 \\ 3 & 3 \end{bmatrix}$,

then AB is -----------------------

○ $\begin{bmatrix} 20 & 36 \\ 25 & 30 \end{bmatrix}$

○ $\begin{bmatrix} 20 & 36 \\ 35 & 30 \end{bmatrix}$

○ $\begin{bmatrix} 20 & 36 \\ 15 & 39 \end{bmatrix}$

○ $\begin{bmatrix} 20 & 36 \\ 45 & 39 \end{bmatrix}$

Ans=3

Question No: 24   (Marks: 1)   - Please choose one
Amount of discount is obtained as
° **Percentage of Discount x List Price** 105

? Percentage of Discount / List Price

? Percentage of Discount - List Price

? None of these

Question No: 25   (Marks: 1)   - Please choose one
…….. Arithmetic operations provide the foundation for all mathematical operations are:

► 4
► 5
► 3
► 6
(+,-,*,/,^) see page 12

Question No: 26   (Marks: 1)   - Please choose one
If an asset is purchased at Rs 3000 on the date 6/29/2008 and the first depreication period ends on 11/29/2008, where salvage value is 300 and period is taken as 1 on 20% interest rate where basis =1, then which of the following function Returns the depreciation for given accounting period

   ? =AMORLINC(3000, 6/29/2008, 11/29/2008, 300, 1*12, 20%, 1)
   ? =AMORLINC(3000, 6/29/2008, 11/29/2008, 300, 1, 20% / 12 , 1)
   ? =AMORLINC(3000, 6/29/2008, 11/29/2008, 300, 1, 20%, 1)
   ? =AMORLINC(3000, 6/29/2008, 11/29/2008, 300, 1*12 , 20%/12, 1)
   ? None of these

Question No: 27   (Marks: 1)   - Please choose one
  To add two cells (A1 and A2) together you use the following formula

   ► =A1 + A2
   ► =Add(A1+A2)
   ► =together(A1:A2)
   ► A1 plus A2

Question No: 28   (Marks: 1)   - Please choose one
Number of 5 permutations of 5 different objects taken 5 at a time is......
   ► 5!
   ► 6!
   ► 0!
   ► 4!

Question No: 29   (Marks: 1)   - Please choose one
For any event if the probability of success is *x*, then the probability of failure is

   ► also *x*
   ► *1 + x*
   ► *1 − x*
   ► *x - 1*
  See binomial dist. P = success q=failure q=1-p so here p=x then q=1-x

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

Formula = $e^{-\lambda} \lambda^x / x!$,used to calculate ------------------------
   ► Normal Distribution
   ► Binomial Distribution
   ► Poisson Distribution

Question No: 31   (Marks: 1)   - Please choose one

**The Excel function =POISSON (2, 5, True) is used to calculate --------------
---------**

   ► **Normal Distribution**
   ► **Binomial Distribution**
   ► **Poisson Distribution**
   ► **Cumulative Poisson Distribution**

Question No: 32   (Marks: 1)   - Please choose one
**Which of the following is the correct syntax for calculating average of
the data 1,2,3,4,5,6,7**
   ► **=AVERAGE(1,2,3,4,5,6,7)**
   ► **=AVERAGE(1+2+3+4+5+6+7)**
   ► **=AVERAGE(1,2,3,4,5,6,7)/2**
   ► **=AVERAGE(1+2+3+4+5+6+7)/2**

Question No: 33   (Marks: 1)   - Please choose one
Geographical data deals with....

   º **Religion**
   ? **Height**
   º **Income**
   ? **Regions** 158

Question No: 34   (Marks: 1)   - Please choose one
Given a matrix A such that

Then A⁻¹ will be

Given a matrix A such that
$$A = \begin{bmatrix} -3 & -2 \\ 4 & 3 \end{bmatrix}$$
Then A⁻¹ will be

? $\begin{bmatrix} -3 & -2 \\ 4 & -3 \end{bmatrix}$

? $\begin{bmatrix} 3 & 2 \\ -4 & -3 \end{bmatrix}$

? $\begin{bmatrix} 3 & 2 \\ 4 & -3 \end{bmatrix}$

? None of these

2 option correct

Question No: 35   (Marks: 1)   - Please choose one
**A Linear Programming model seeks to …………………..a
linear function, subject to a set of linear constraints.**

► **maximize**
► **minimize**
► **maximize or minimize**
► **utilize**

Question No: 36   (Marks: 1)   - Please choose one
percentage of ratio of given number with standard numbe is.......
► **100**
► **Same number**
► **1000**
► **10**

Question No: 37   (Marks: 1)   - Please choose one
Net income can be calculated by using
► **Net income = Number of units sale above break even point * Price per unit**
► **Net income = Total number of units sold * Price per unit**
► **Net income = Number of units sale above break even point * contribution margin per unit**
► **Net income = Total number of units sold * contribution margin per unit.**

Question No: 38   (Marks: 1)   - Please choose one
Ogive of a statistical data can be drawn by
► **a) using the cumulative frequency of the distribution** 182

► **b) frequency of the distribution**
► **c) both (a) & (b)**
► **d) None of these.**

Question No: 39   (Marks: 1)   - Please choose one
Trends =……

► **Expected + seasonal**
► **Expected - seasonal**
► **Expected * seasonal**
► **Expected / seasonal**

Question No: 40   (Marks: 1)   - Please choose one

The formula for Poisson Distribution is   -------------------------------
► $P(x = n) = [\,^n c_x] P^x (1-p)^{n-x}$
► $b*(x; r, P) = \,_{x-1}C_{r-1} * P^r * (1 - P)^{x-r}$
► $P(X=x)= \mu^x e^{-\mu} / x! , x=0,1,…….$
► **None of the above.**

Question No: 41   (Marks: 2)

Given for a distribution of lengths of 200 metal bars the variance =2.271 and mean is 33.9. Find coefficient of variation.

Question No: 42   (Marks: 2)
 Write down two application of Linear Programming

Question No: 43   (Marks: 2)
 What are the disadvantages for the so larger & so smaller values of smoothing constants in forecast analysis?

Question No: 44   (Marks: 3)
 Find the value of Covariance Cov(X, Y) if var(X) = 81, var(Y) =16 and correlation coefficient r=0.4?

Question No: 45   (Marks: 3)

In a school, 50% students study science subjects and 30% of them study biology. What is the probability that the student studies Biology?

Question No: 46   (Marks: 3)
 In linear programming, what is meant by feasible region?

Question No: 47   (Marks: 5)

 A student goes to the library. The probability that she checks out (a) a work of fiction is 0.40, (b) a work of non-fiction is 0.30, , and (c) both fiction and non-fiction is 0.20. What is the probability that the student checks out a work of fiction, non-fiction, or both?

Question No: 48   (Marks: 5)
 Calculate the mean, median and mode for the following set of data
2,2,1,4,4,8,5, 6, 8, 19, 2, 1, 6, 25

Mean :   6.64 (14)
Median:
Mode :   13

Question No: 49   (Marks: 5)
 The ages of 5 students in a population are 12, 16, 10, 14 and 13. Considering all possible samples of size two which can be drawn with replacement from this population, find
   a) The mean age.
   b) The standard deviation of the students.

Question No: 50   (Marks: 10)
 Find all the quartiles for the following data set:
4.3, 5.1, 3.9, 4.5, 4.4, 4.9, 5.0, 4.7, 4.1, 4.6, 4.4, 4.3, 4.8, 4.4, 4.2,
 4.5, 4.4

space

► d) None of these.

Question No: 39   (Marks: 1)   - Please choose one
Trends =……

► Expected + seasonal
► Expected - seasonal
► Expected * seasonal
► Expected / seasonal

Question No: 40   (Marks: 1)   - Please choose one

The formula for Poisson Distribution is   -------------------------------

► $P(x = n) = [^{n}c_{x}] P^{x} (1-p)^{n-x}$
► $b^{*}(x; r, P) = {}_{x-1}C_{r-1} * P^{r} * (1 - P)^{x-r}$
► $P(X=x)= \mu^{x} e^{-\mu} / x! , x=0,1,…….$
► None of the above.

Question No: 41   (Marks: 2)
Given for a distribution of lengths of 200 metal bars the variance =2.271 and mean is 33.9. Find coefficient of variation.

Question No: 42   (Marks: 2)
Write down two application of Linear Programming

Question No: 43   (Marks: 2)
What are the disadvantages for the so larger & so smaller values of smoothing constants in forecast analysis?

Question No: 44   (Marks: 3)
Find the value of Covariance Cov(X, Y) if var(X) = 81, var(Y) =16 and correlation coefficient r=0.4?

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In a school, 50% students study science subjects and 30% of them study biology. What is the probability that the student studies Biology?

Question No: 46   (Marks: 3)
In linear programming, what is meant by feasible region?

Question No: 47   (Marks: 5)

A student goes to the library. The probability that she checks out (a) a work of fiction is 0.40, (b) a work of non-fiction is 0.30, , and (c) both fiction and non-fiction is 0.20. What is the probability that the student checks out a work of fiction, non-fiction, or both?

Question No: 48   (Marks: 5)
Calculate the mean, median and mode for the following set of data
2,2,1,4,4,8,5, 6, 8, 19, 2, 1, 6, 25

Mean :   6.64 (14)
Median:
Mode :   13

Question No: 49   (Marks: 5)
The ages of 5 students in a population are 12, 16, 10, 14 and 13. Considering all possible samples of size two which can be drawn with replacement from this population, find
**   a) The mean age.**
**   b) The standard deviation of the students.**

Question No: 50   (Marks: 10)
 Find all the quartiles for the following data set:
4.3, 5.1, 3.9, 4.5, 4.4, 4.9, 5.0, 4.7, 4.1, 4.6, 4.4, 4.3, 4.8, 4.4, 4.2, 4.5, 4.4

FINALTERM EXAMINATION
Fall 2009
MTH302- Business Mathematics & Statistics (Session - 2)
Time: 120 min
Marks: 80

Question No: 1   (Marks: 1)   - Please choose one
 An arrangement of data by successive time periods is called a

    ► Exponential Smoothing

    ► Time Series
    ► Combination

    ► Permutation

Question No: 2   (Marks: 1)   - Please choose one
A moving average is one of a family of similar techniques used to analyze

- ► Time series data
- ► Correlation data

- ► Regression model

- ► Fitting a curve

Question No: 3   (Marks: 1)   - Please choose one
A relationship between variables that can be represented by a straight line equation is

- ► Non linear regression model

- ► Non linear equation

- ► **Simple linear regression model**
- ► Population regression model

Question No: 4   (Marks: 1)   - Please choose one
The ratio of the standard deviation of a distribution to the mean of that distribution is referred to as
- ► a probability distribution

- ► the expected return

- ► **Coefficient of variation**

- ► the standard deviation

Question No: 5   (Marks: 1)   - Please choose one
Which is the proportion of total variation explained by the regression line?
- ► Simple coefficient of determination

- ► Slope of the regression line
- ► Mean square error
- ► Standard error of the regression coefficient

Question No: 6   (Marks: 1)   - Please choose one
What is the slope of the line y = -3.4x - 2.5?
- ► -2.5

- ► 2.5

- ► **-3.4**

► 3.4

Question No: 7   (Marks: 1)   - Please choose one
How many arrangements can be made of the letter MOVING

► 900
► 120
► 600
► 720

**Ref: total words=6 and M=1,O=1,V=1,I=1,N=1,FG=1 SO
6!/1!1!1!1!1!1!=6!=720**

Question No: 8   (Marks: 1)   - Please choose one
How many words of 4 consonants and 3 vowels can be made from 12
consonants and 4 vowels, if all the letters are different?
► 16C7 * 7!
► 12C4 * 4C3 * 7!
► 12C3 * 4C4
► 12C4 * 4C3

REF: http://www.bestsamplequestions.com/sat-sample-
questions/quantitative/quantitative-16.html

Question No: 9   (Marks: 1)   - Please choose one
Which of the following graphs is a visual presentation using horizontal or
vertical bars to make comparisons or to show relationships on items of similar
makeup?

► bar graph
► pie graph
► pictograph
► line graph

Question No: 10   (Marks: 1)   - Please choose one
In a positively skewed distribution
► The mean, median, and mode are all equal.

► The mean is larger than the median
► The median is larger than the mean.

► The standard deviation must be larger than the mean or the median.

REF: PAGE187

Question No: 11   (Marks: 1)   - Please choose one
A scatter diagram:
**► Is a graphic tool designed to portray the relationship between
variable.**
► Uses group data
► Does not allow negative values
► Uses complex data.

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

Suppose we developed the following least squares regression equation: *Y* =
3.5 + 2.1*X*. Which of the following statements is correct?
- ► **The dependent variable increases 2.1 for an increase of 1 in *X***
- ► The equation crosses the *Y*-axis at 3.
- ► If *X* = 5, then *Y* =15.
- ► X and Y are inversely proportional

Question No: 13   (Marks: 1)   - Please choose one
 Researcher computed the mean, median, and the standard deviation for set
performance scores. If 5 were to be added to each score which of these 3
statistics would change.

- ► Mean only
- ► Median only
- ► Standard deviation only
- ► **Mean and median**

REF:
 http://answers.yahoo.com/question/index?qid=20080524190123AAAbal6

Question No: 14   (Marks: 1)   - Please choose one
 **A large basket of fruit contains 3 oranges, 2 apples and 5 bananas. If a
piece of fruit is chosen at random, what is the probability of getting an
orange or a banana?**
- ► 1/2
- ► 5/4
- ► **4/5**
- ► 1/7

   **SOL: CHOSE=1 LET A=oranges and B=bananas then P(A)=3/10 and
P(B)=5/10 or mean add then P(A or B)=P(A)+P(B)=3/10+5/10=8/10=4/5**

Question No: 15   (Marks: 1)   - Please choose one
 **In a shipment of 100 televisions, 6 are defective. If a person buys two
televisions from that shipment, what is the probability that both are
defective?**

- ► **1/330**
- ► 1/50
- ► 3/100
- ► None of these

 Sol:
 defective   good   total

 6   94   100

chosen=2

P(both are defective) = 6c2*94c0/100c2 = 15/4950=1/330

Question No: 16   (Marks: 1)   - Please choose one
 The midrange is **not** greatly affected by outliers
- ► False
- ► True

Question No: 17   (Marks: 1)   - Please choose one
 The ……………is a relationship that describes the dependence of the expected value of the dependent random variable for a given value of the independent non random variable.

▶ Correlation
▶ **Regression**
▶ Positive correlation

▶ Hypothesis

Question No: 18   (Marks: 1)   - Please choose one
 Equation of line passing through (0, 0) having slope 6 is

▶ **Y=6X**
▶ Y=X

▶ Y-1=6X

▶ Y= 6(X - 3)

 Ref: 1 The point slope form of an equation of a line that passes through the point (x_1, y_1) and has slope m is $y - y_1 = m(x - x_1)$.
 [Formula.]

2 Let $(x_1, y_1) = (0, 0)$ and m = 6.

3 y - 0 = (6)(x - 0)
 [Substitute the values.]

4 y = 6x

Question No: 19   (Marks: 1)   - Please choose one
 Which of the following is **not** a violation of the independence assumption?
▶ Negative autocorrelation
▶ A pattern of cyclical error terms over time
▶ Positive autocorrelation
▶ A pattern of alternating error terms overtime

▶ **A random pattern of error terms over time**

Question No: 20   (Marks: 1)   - Please choose one
 All of the following are assumptions of the error terms in the simple linear regression model except

▶ normality.
▶ error terms with a mean of zero.
▶ constant variance.
▶ **variance of one.**

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

If Cost = Rs. 7060 and Markup Rate = 46.7% then Selling price equal to ------- -------

▶ Rs. 11253.05
▶ Rs. 32970.2
▶ **Rs. 10357.02**
▶ Rs. 9046.7

See page 101

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

In a ------------ ,data is spread symmetrically about the mean.

▶ binomial
▶ **normal distribution**
▶ poisson

Ref: Normal Distribution. The normal distribution (the "bell-shaped curve" which is symmetrical about the mean) is a theoretical function commonly used in inferential statistics as an approximation to sampling distributions

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

If the regression equation is equal to 23.6 - 54.2X, then 23.6 is the _____ while -54.2 is the _____ of the regression line.

▶ slope, intercept
▶ **intercept, slope**
▶ slope, regression coefficient
▶ radius, intercept

Ref: a= intercept b=slope or regression coefficient y=a+bx

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

The price at which a business purchases merchandise is called the

▶ **List**
▶ Cost

▶ Investment

▶ Exchange rate

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

If A and B are any two matrices of order and respectively and $m>n$ and $p<q$. What should be the condition on m, n, p, q for the product AB to hold?

▶ n>p
▶ m<=q
▶ q=p
▶ n=p

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

If the basic salary of the employee is 10,000 and his taxable amount is 12,000, what is the amount of the allowances he is getting?

▶ 10000

► 12000
► 7000
► **2000**
Ref: see page 24
Question No: 27   (Marks: 1)   - Please choose one
The associations between two variables is said to be near perfect if the value of *r* is

► -0.5
► 0.6
► **0.9**
► -0.8
Perfect correlation: If Pearson's correlation coefficient value is near ± 1, then it said to be a perfect correlation.
Question No: 28   (Marks: 1)   - Please choose one
The formula for compound interest for n number of periods is

► $S = P(1 + r/100)* n$

► $S = P(1 + n/100)^{\wedge} r$

► **$S = P(1 + r/100)^{\wedge} n$** 58

► $S = P(1 + r/100)/ n$

Question No: 29   (Marks: 1)   - Please choose one
Order of a Matrix =
► Number of Columns xNumber of Rows

► Number of Rows / Number of Columns

► **Number of Rows x Number of Columns**

► None of these

Question No: 30   (Marks: 1)   - Please choose one
The text concatenation operator is used to
► **include ":" and ","**
► calculate exponentiation: ^

► combine two text strings
► make comparisons.

Question No: 31   (Marks: 1)   - Please choose one
A percentage is a way of expressing a number as
► **a fraction of 100 .**
► sum of number with 100.

► multiplication of number with 100.

► average of number with 100.

Question No: 32   (Marks: 1)   - Please choose one
SLN returns the straight-line depreciation of an asset for

► Zero period

► **One period** 134
► Two periods

► Three periods

Question No: 33   (Marks: 1)   - Please choose one
Mathematical Modeling of the phenomenon of the chance or randomness is called

► Combinatorial Theory

► **Probability Theory**
► Statistical Theory

► Group Theory

Question No: 34   (Marks: 1)   - Please choose one
Probability means the making assessment of

► events

► experiments

► samples

► **chances**

Question No: 35   (Marks: 1)   - Please choose one

The result of POISSON is #NUM. Why?

   ► One parameter is missing.
   ► Third parameter is FALSE.
   ► The number of events is negative.
   ► Expected Mean is greater than number of events.
Ref page267

Question No: 36   (Marks: 1)   - Please choose one
A regression equation Y = a + bX is used to
   ► Estimate the value of the dependent variable based on the independent variable
   ► Measure the association between two variables
   ► Estimate the value of the independent variable based on the dependent variable
   ► Estimate the coefficient of determination

Question No: 37   (Marks: 1)   - Please choose one
Chi-distribution is used to decide whether or not certain variables are
   ► Dependent
   ► Independent
   ► Discrete
   ► Continuous

Question No: 38   (Marks: 1)   - Please choose one
The formula to find the STEP = ...

   ► [(100-P)/n] ^ (1/2)%
   ► [P (100-P)/n] ^ (1/2)% pg320
   ► [P (100-P)/(n+1)] ^ (1/2)%
   ► [P (100 +P)/n] ^ (1/2)%

Question No: 39   (Marks: 1)   - Please choose one
If 15% discount is offered on a list price (L) of an item then its new price (L_1) will be…….

   ► L_1 = L – (L × 15%)
   ► L_1 = L + (L × 15%)
   ► L_1 = (L × 15%) - L
   ► L_1 = L× (L - 15%)

Question No: 40   (Marks: 1)   - Please choose one
Trends =……

   ► Expected + seasonal
   ► Expected - seasonal
   ► Expected * seasonal
   ► Expected / seasonal

Question No: 41   (Marks: 2)
Define Linear Programming.

Question No: 42   (Marks: 2)

Find the intercept of the regression line Y=a+bX if its slope is 0.65 associated with the following data

X	0	2	4
Y	0	3	1

Question No: 43   (Marks: 2)

What is most common measure of central tendency and how it is calculated?

Question No: 44   (Marks: 3)

Explain the difference between Binomial distribution and negative binomial distribution with the help of an example.

Question No: 45   (Marks: 3)

What is a central tendency? Write any three of its types.

Question No: 46   (Marks: 3)

Find the trends in the data below:

Question No: 47   (Marks: 5)

Find the standard deviation of 4, 9, 11, 12, 17, 5, 8, 12, 14

Question No: 48   (Marks: 5)

A dice is thrown twice, what is the probability that a prime number will appear in first throw and that a number less than 5 in second throw?

Question No: 49   (Marks: 5)

A company introduces a new product in **4** locations A,B,C,D. The number of items sold during a weekend follows:

Location	A	B	C	D
Number of items sold	80	65	70	85

Let H_0 be the null hypothesis of UNIFORM distribution that the location does not make a difference then evaluate x^2 value.

Question No: 50   (Marks: 10)
A test of the breaking strengths of six ropes manufactured by a company showed a mean breaking strength of 7750N and a standard deviation of 145N, where the manufacturer claimed a mean breaking strength of 8000N. Can you support the manufacturer's claim at the significance levels of 0.05.

Paper 4

SOLVED BY CHANDA REHMAN

FINALTERM EXAMINATION

Fall 2009

MTH302- Business Mathematics & Statistics (Session - 4)
                                                              Time: 120 min
                                                              Marks: 80

Question No: 1   (Marks: 1)   - Please choose one
In the equation $\bar{Y} = 2 + 3\bar{X}$ the intercept is

  ► 4
  ► 1
  ► 3
  ► **2**

 Ref: y=a+bx a= intercept b=slope

Question No: 2   (Marks: 1)   - Please choose one

If the CORRELATION function returns the #DIV/0 ! error value, what is the possible reason of the error?

  ► Array1 and Array2 have different number of data points.
  ► **Either Array1 or array2 is empty.**
  ► Array or reference argument contains text, logical values or empty cells.
  ► The arguments are names, arrays, or references that contain numbers.

Question No: 3   (Marks: 1)   - Please choose one
 The temperature was 30°C in the afternoon and the temperature dropped to 26°C in the evening. Find the percentage change in the temperature.
  ► **13.33%**

  ► 15%

  ► 14.26%

► 12%

Question No: 4   (Marks: 1)   - Please choose one
Which is the proportion of total variation explained by the regression line?
► <mark>**Simple coefficient of determination**</mark>

► Slope of the regression line
► Mean square error
► Standard error of the regression coefficient

Question No: 5   (Marks: 1)   - Please choose one
-------------- measures the strength of the linear relationship between the dependent and the independent variable.

► <mark>**Simple correlation coefficient**</mark>
► Distance value
► Y intercept

► Normal plot

Question No: 6   (Marks: 1)   - Please choose one
A scatter diagram is a chart

► (i) In which the dependent variable is scaled along the vertical axis.

► (ii) In which the independent variable is scaled along the horizontal axis.

► (iii) That portrays the relationship between two variables.

► <mark>**(iv) All (i),(ii) and (iii) are true.**</mark>

Question No: 7   (Marks: 1)   - Please choose one
Frequency of occurrence is used in finding the
► <mark>**weighted mean**</mark>
► median
► mode
► variance

Question No: 8   (Marks: 1)   - Please choose one
The mean of the following is: 12, 9, 3, 8, 5

► 7.2
► 7.1
► <mark>**7.4**</mark>
► 7.5

<mark>**Sol :**</mark>

Question No: 9   (Marks: 1)   - Please choose one
In a positively skewed distribution
► The mean, median, and mode are all equal.

► **The mean is larger than the median**
► The median is larger than the mean.

► The standard deviation must be larger than the mean or the median.

Question No: 10   (Marks: 1)   - Please choose one
Which one of the following is **not** a component of the multiplicative time series model?
► trend
► irregular variation
► **regression trend**
► seasonality

► cyclicity
Ref:
http://www.jhs14.business.msstate.edu/bqa9333/textbook_files/Chapter%20Quizzes/Quiz012.html

Question No: 11   (Marks: 1)   - Please choose one
Suppose we developed the following least squares regression equation: $Y = 3.5 + 2.1X$. Which of the following statements is correct?
► **The dependent variable increases 2.1 for an increase of 1 in X**
► The equation crosses the Y-axis at 3.
► If $X = 5$, then $Y = 15$.
► X and Y are inversely proportional

Question No: 12   (Marks: 1)   - Please choose one
If the dependent variable increases with the independent variable then the coefficient of correlation is
► 0 to -1

► 0 to – 0.5

► 0 to -2

► **0 to 1**

Question No: 13   (Marks: 1)   - Please choose one
Probability of an event lies between

► 0 < P(A) < 1
► -1 ≤ P(A) ≤ 1
► P(A) ≤ 1
► **0 ≤ P(A) ≤ 1**

Question No: 14   (Marks: 1)   - Please choose one
Suppose we developed the following least squares regression equation: $Y= 3 + 2X$. Which of the following statements are correct?
► **The dependent variable increases 2 for an increase of 1 in X**
► The equation crosses the Y-axis at 3.5
► If $X = 5$, then $Y = 14$.
► Y is independent variable

Question No: 15   (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 of a year younger than themselves. Which of the following is CORRECT?

► The correlation is −.5.
► **The correlation is .5.**
► The correlation is 1.
► The correlation is −1.
► The correlation is 0

Question No: 16   (Marks: 1)   - Please choose one
If mean scores of midterm and final term of a student is 78% and 80%. Also variances are 106 and 77 then
► **Midterm has greater variation in marks than Final term**
► Final term has greater variation in marks than Midterm
► No variation in midterm and final term marks
► None of the above.
Ref:
use coefficient of variation formula then greater value of coefficient of variation has greater variation.

Question No: 17   (Marks: 1)   - Please choose one
If Sx = 2.56, Sy = 15.91, Sxy = 29.59, then correlation Coefficient is
► **0.726**
► 0.821
► 0.623
► 0.80
Ref:
r = Sxy / (Sx)(Sy)
=29.59/(2.56)(15.91)
=0.726

Question No: 18   (Marks: 1)   - Please choose one
Sum of annuity is always

► **Present value**

► Future value

► Net present value

► Current value

Question No: 19   (Marks: 1)   - Please choose one
Discounts that are deducted one after the other from the list price are called
_____ .
► <mark>**Series trade discount**</mark>
► Inconsequential trade discounts

► Spontaneous trade discounts

► Earned trade discounts

Question No: 20   (Marks: 1)   - Please choose one
In the syntax of Poisson distribution, let x is the no. of events , the POISSON
returns the #NUM! Error value when

►
►
► X is an integer

►

Question No: 21   (Marks: 1)   - Please choose one
In annuity interest is charged by the:
► Simple interest method

► Compound interest method
► <mark>**Both simple and compound interest method**</mark>

► Accumulated method

Question No: 22   (Marks: 1)   - Please choose one
One kg apples cost Rs. 12. They are sold at the markup of 12 ½ %. The
selling price is ------------

► <mark>**13.50**</mark>
► 12.50

► 11.50

► 14.50

Question No: 23   (Marks: 1)   - Please choose one
The strength of associations between two variables is said to be very strong if
the value of correlation coefficient is

► 1
► infinity
► -1
► **1 or -1**

Question No: 24   (Marks: 1)   - Please choose one
The point where a straight line cuts the X-axis is called
   ► slope
   ► starting point
   ► **y-intercept**
   ► **x-intercept (doubt)**

Question No: 25   (Marks: 1)   - Please choose one
The value of x after solving the following linear equation is
$$-2x + 6 = 4x - 2$$

   ► 0
   ► 3
   ► 1/2
   ► **4/3**

Question No: 26   (Marks: 1)   - Please choose one
Interest calculated upon the principal amount added to the interest on it is called ……

   ► Simple interest
   ► Compound interest
   ► Annual interest per year
   ► Semi annual interest

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

Umair's greeting card business sells a card for Rs. 30. To make his desired profit, Umair needs a 35% Markup on Selling Price.   What does a greeting card Cost Tanveer?
   ► Rs 9.5
   ► **Rs 19.5**
   ► Rs 29.5
   ► Rs 22.5

Question No: 28   (Marks: 1)   - Please choose one
Formula   P x R x T/100 gives us the value of

   ► **Simple interest**
   ► Principal

   ► Compound interest

   ► All above mentioned

Question No: 29   (Marks: 1)   - Please choose one
Which function calculates your monthly payment?
    ► **PMT** <small>not sure</small>
    ► NPER
    ► PV
    ► all of these choices

Question No: 30   (Marks: 1)   - Please choose one
The ratio of the standard deviation of a distribution to the mean of that distribution is referred to as

    ► a probability distribution.

    ► the expected return.

    ► the standard deviation.

    ► **coefficient of variation**.

Question No: 31   (Marks: 1)   - Please choose one
Coefficient of variation shows dispersion of the
    ► **standard deviation about mean.**
    ► standard deviation about mode.
    ► variance about mean.
    ► variance about mode.

Question No: 32   (Marks: 1)   - Please choose one
Binomial expansion for $(3x-2y)^0$ is equal to

    ► **1**
    ►
    ►
    ►

Question No: 33   (Marks: 1)   - Please choose one
Probability means the making assessment of

    ► events

    ► experiments

    ► samples

    ►   **chances**
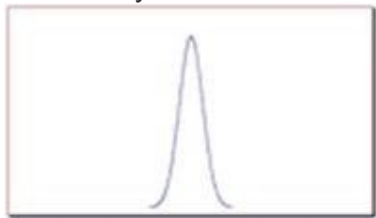
Question No: 34   (Marks: 1)   - Please choose one

The result of BINOMDIST function is wrong. Give reason why.

► One parameter is missing.
► Last parameter should be FALSE
► The number of successes in trials should be negative.
► Probability of success on each trial should not be 1/2.

Question No: 35   (Marks: 1)   - Please choose one
What do you deduce from the diagram of the Normal Distribution?

► Mean is greater than Standard deviation.
► Mean is lesser than Standard deviation.
► Mean is equal to Standard deviation.
► No result can be drawn.

Question No: 36   (Marks: 1)   - Please choose one
The range of the correlation coefficient is.....
► -1 to 0
► 0 to 1
► -1 to 1
► None of the above

Question No: 37   (Marks: 1)   - Please choose one
A histogram is a special kind of …….

► Pictures graph or
► Line graph
► Bar graph
► Circle graph

Question No: 38   (Marks: 1)   - Please choose one

If the population standard deviation is not known and the sample size is large(n>=30),then the Test statistic to be used is -------------

► **(a) t-test**
► (b) z-test
► both (a) and (b)
► none of these

Ref:
if population standard deviation (sigma) known we use z-test and when population standard deviation (sigma) is unknown and n>30 we use z-test and when population standard deviation (sigma) is unknown and n<30 we use t-test.

Question No: 39   (Marks: 1)   - Please choose one
When a straight line is fitted to time series data, it is called

► Linear equation

► Linear regression

► **Linear trend**
► Non-Linear equation

Question No: 40   (Marks: 1)   - Please choose one
The formula to find the STEP = ...

► $[(100-P)/n]^{(1/2)}\%$
► **$[P(100-P)/n]^{(1/2)}\%$**
► $[P(100-P)/(n+1)]^{(1/2)}\%$
► $[P(100+P)/n]^{(1/2)}\%$

Question No: 41   (Marks: 2)
Define Seasonal Variation.

Question No: 42   (Marks: 2)

Define Type-I error.

Question No: 43   (Marks: 2)
What will be the correlation coefficient r between variables X and Y if
varX=3,varY=3 and Cov(X,Y)=2 ?
Solution:

$$Sx = \sqrt{\operatorname{var} x}$$

$$Sx = \sqrt{3}$$

$$Sx = 1.7321$$

$$Sy = \sqrt{\operatorname{var} y}$$

$$Sy = \sqrt{3}$$

$$Sy = 1.7321$$

Solution: r = Cov(X,Y) / (Sx) (Sy)
r = 2 / (1.7321) (1.7321)
r = 0.67

Question No: 44   (Marks: 3)
Eleven subjects carried out the same task using a pocket calculator. The
times (in seconds) taken were: 69, 75, 83, 58, 95, 72, 86, 88, 77, 79, 90.
Find the range & median .

Question No: 45   (Marks: 3)
A random sample of size 36 is taken from a normal population with a
known variance δ^2=25   If the mean of the sample is 42.6. Find the left
confidence limit for the population mean.

Question No: 46   (Marks: 3)
A restaurant has a menu with 4 appetizers, 5 entrees and 2 desserts. Find
the number **n** of ways a customer can order an appetizer, entrée and dessert.

Question No: 47   (Marks: 5)
a)   If the five letters *a, b, c, d, e* are put into a hat, in how many different
a)   ways could you draw one out?
b)   When one of them has been drawn, in how many ways could you
a)   draw a second?
c)   Therefore, in how many ways could you draw two letters?
This number is denoted by $^5P_2$.
d)   What is the meaning of the symbol $^5P_3$?
e)   Evaluate $^5P_3$.

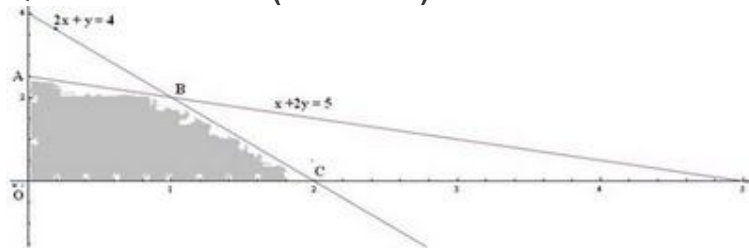**Question No: 48   (Marks: 5)**
Consider the histograms below.
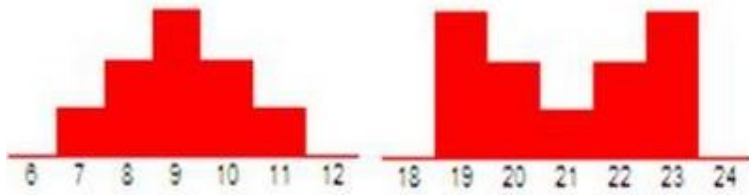
Which of the following statements are true? Give reason for your selected option.

I. Both data sets are symmetric.
II. Both data sets have the same range.

(A) I only
(B) II only
(C) I and II
(D) Neither is true.
(E) There is insufficient information to answer this question.

Question No: 49   (Marks: 5)

Discuss the optimality (maximization) of the objective function:

z= 2x + 3y
 at the corner points of the given shaded feasible region *OABC*.
It is also provided that the objective function subjects to the following constraints

2x + y ≤ 4
x + 2y ≤ 5
x, y ≥ 0

Question No: 50   (Marks: 10)
 Attendance in a High School shows 6 absences. What is the probability that on a given day there will be more than 7 people absent?

MTH302- Business Mathematics & Statistics (Session - 3)

Time: 120 min

Marks: 80

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

If all the points in the scatter diagram seem to lie near a line, the correlation is said to be

► Quadratic

► **Linear**

► Positive

► Negative

Ref:
http://books.google.com.pk/books?id=kNutPR9P3hoC&pg=PA494&lpg=PA494&dq
=If+all+the+points+in+the+scatter+diagram+seem+to+lie+near+a+line,+the+correlati
on+is+said+to+be&source=bl&ots=EhuM3Yt9BU&sig=rYV6gkVwMyKasfrdA03D
2H20s2c&hl=en&ei=Z9kUTZ-
bG9Gp8QOZ0o2ABw&sa=X&oi=book_result&ct=result&resnum=8&ved=0CEQQ6
AEwBw#v=onepage&q&f=false   page 494 in this book in link

Question No: 2   (Marks: 1)   - Please choose one

In regression analysis, if X is to be estimated on the basis of Y, then the equation is called the regression equation of

► X on X

► Y on Y

► **X on Y**

► Y on Y

Question No: 3   (Marks: 1)   - Please choose one

The correlation coefficient between *x* and *y* shows

► Whether *y* depends on *x*

► whether *x* causes *y*

► **whether there is any relation between *x* and *y***

► whether there is a linear relation between *x* and *y*

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

Intercept function calculates the point at which a line will intersect ------------

► the y-axis

► the x-axis

► **Origin**

► Vertical line

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

What is the interest on Rs. 1600 for one year at the rate   %?

► 65

► 56

► 75

► 90

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

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

► Cyclical

► **Seasonal**

► Trend

► Secular

Seasonal variation change according to season

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

Frequency of occurrence is used in finding the

► **weighted mean**

► median

► mode

► variance

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

For what purpose is the method of least squares used on time-series data?

► It is used for eliminating irregular movements

► **It is used for obtaining the trend equation.**

► It is used for deseasonalizing the data.

► It is used for exponentially smoothing a series.

 Ref:
http://wps.prenhall.com/bp_berenson_bbs_10/34/8928/2285698.cw/content/index.
html

Question No: 9   (Marks: 1)   - Please choose one

In correlation analysis

► We consider several independent variables.

► **We study the strength of the association between two variables**

► We consider the intercept with the *Y*-axis.

► We consider the intercept with the *X*-axis.

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

Equation of line passing through (0, 0) having slope 6 is

► **Y=6X** repeated

► Y=X

► Y-1=6X

► Y= 6(X - 3)

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

The class frequency is

► **The number of observations in each class**

► The difference between consecutive lower class limits

► Always contains at least 5 observations

► Usually a multiple of the lower limit of the first class

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

Twelve randomly-chosen students were asked how many times they had missed class during a certain semester, with this result: 2, 1, 5, 1, 1, 3, 4, 3, 1, 1, 5, 18. For this sample, the median is

► 2

► 3

► 3.5

► **2.5**

Sol

n = 12 so array data 1,1,1,1,1,2,3,3,4,5,5,18 data is in even numbers so median is in two middle values of this data the middle tow values are 2,3 so median is 2+3/2=2.5

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

The formula to calculate Mean squared deviation from the mean is

►

►

►

►

Ref formula is

$$\text{Mean deviation} = \frac{\sum f|x - mean|}{n}$$

Grouped data Mean deviation= $\text{Mean deviation} = \dfrac{\sum f|x - mean|}{\sum f}$

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

What is the median for the following numbers?
83, 54, 48, 60

► **57**

► 67

► 77

► 55

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

The median in an odd number of values is the ------------ value.

► first

► **middle**

► last

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

A dice is thrown thrice, what is the probability that even number will come each time?

► **1 / 2**

► 1 / 3

► 1 / 4

► 1 / 8

Ref:

The right answer is 1/2 when we throw a die thrice total even number will be 108 and 108 are odd so 108/216 =1/2

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

The margin is the difference between the selling price and the _____.

► Profit

► Revenue

► **Cost**

► tax

Question No: 18   (Marks: 1)   - Please choose one

The price at which investors buy or sell a share of stock at a given time is referred as

► **Face value**

► Market value

► Accumulated value

► Earning value

Question No: 19   (Marks: 1)   - Please choose one

The Basic salary of an employee is Rs 7,000 and the allowances are Rs 3000. Then the social charges will be -----------------------------------.

► Rs 2030

► **Rs 2900**

► Rs 2500

► Rs 2150

Ref:

the social charges are 29% of gross salary here gross salary is 7000+3000=10,00 so 29%*10,000=2,900

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

A Matrix is a ……………. of numbers

► Rectangular array

► Triangular array

► Linear array

► None of these

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

Markdown means a reduction from the

   ► Original cost price

   ► Original sale price

   ► Original Net price

   ► None of these

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

 If a matrix has four column and 5 rows then its dimensions are

   ► 20

   ► 4x5

   ► **5x4**

   ► 5x5

   Order of matrix= row*column

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

If C = Cost price, S = Selling Price then the margin on the cost is equal to

   ►

   ►

►

►

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

While using Frequency function ,one always selects

► one cell more than data array.

► one cell more than bins array .

► at most 20 cells.

► random number of cells.

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

An arrangement of all or some of a set of objects in a ….. order is called permutation.

► Definite

► Indefinite

► Same

► Different

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

 Which of the following statistics would give you the best estimate of the typical examination score of Mr. Ahmad's class of 35 students?

► A correlation coefficient.

► The variance.

► The standard deviation.

► **The mean.**

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

 The ratio of the standard deviation of a distribution to the mean of that distribution is referred to as

► a probability distribution.

► the expected return.

► the standard deviation.

► **coefficient of variation.**

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

If an operation A can be performed in m ways and B in n ways, then the two operations can be performed together in ------ways.

► m+n

► m-n

► **m*n**

► n/m

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

The ratio of the standard deviation of a distribution to the mean of that distribution is referred to as

► a probability distribution.

► the expected return.

► the standard deviation.

► coefficient of variation.

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

 Probability means the making assessment of

► events

► experiments

► samples

► **chances**

Question No: 31   (Marks: 1)   - Please choose one

What do you deduce from the diagram of the Normal Distribution?

► Mean is greater than Standard deviation.

► Mean is lesser than Standard deviation.

► Mean is equal to Standard deviation.

► No result can be drawn.

Question No: 32   (Marks: 1)   - Please choose one

The intercept is the point at which a line crosses

► X axis

► Y axis

► An axis

► **At the origin**

Question No: 33   (Marks: 1)   - Please choose one

Regression coefficients are independent of --------------------

► Scale

► Origin

► Both scale and origin

► None of these

Question No: 34   (Marks: 1)   - Please choose one

How many types of measure of dispersion

► 2

► 3

► 4

► 5

Question No: 35   (Marks: 1)   - Please choose one

Is every Linear Programming has solution?

► true

► false

► may or may not

► none of these

Question No: 36   (Marks: 1)   - Please choose one

Probability of a person's death in a year

► 1/365

► 0

► 1

► Undetermined

Question No: 37   (Marks: 1)   - Please choose one

If order for a sports item has a net price (N) of Rs.2000 after a 20% trade discount (d). Then formula for list price………………

► L = N / (1 – d) PG107

► L = (1 – d)/N

►   L = (1 + d)/N

► L =N/ (1 + d)

Question No: 38   (Marks: 1)   - Please choose one

The difference between the markdown and discount is

► Discount is a reduction in the price of an item based upon the customer making the purchase

Markdown on the original price attract the customers to return their store versus other

► Discount on the original amount based on low sale of product

Mark down is a devaluation of a product based upon its inability to be sold at the

original planned selling price

► **Discount is a reduction in the price of an item based upon the customer making the purchase**

Mark down is a devaluation of a product based upon its inability to be sold at the   doubt

original planned selling price

► None of these

Question No: 39   (Marks: 1)   - Please choose one

For CUMULATIVE Binomial distribution, which of the following formulae is correct?

► =BINOMDIST(4, 7, 0.5, FALSE)

► =BINOMDIST(4, 7, 0.5, TRUE)

► =BINOMDIST(4, 7, 2.5, FALSE)

► =BINOMDIST(4, 7, 2.5, TRUE)

Question No: 40   (Marks: 1)   - Please choose one

Which method of trend analysis is useful for data not having a pronounced trend or seasonality?

► multiplicative model

► decomposition model

► ratio-to-moving average method

► **exponential smoothing method**

   Ref:
http://www.jhs14.business.msstate.edu/bqa9333/textbook_files/Chapter%20Quizzes/Quiz012.html

Question No: 41   (Marks: 2)

Suppose in a university there are 5 male and 3 female instructors for the subject of statistics then by using the sum rule of counting, in how many ways a student can choose the instructor of this subject?

Question No: 42   (Marks: 2)

Find the value of   , where 95% confidence interval is given.

Question No: 43   (Marks: 2)

Give any two basis for the classification of statistical data.

Question No: 44   (Marks: 3)

Define median and find the median of the following set of data 3, 6, 11, 14, 19, 19, 21, 24, 31

Question No: 45   (Marks: 3)

What is the probability that a bag filled by the machine weighs less than 515 g?

z = (515 - 510)/2.5 = 2.0

(Use the table given below)

Question No: 46   (Marks: 3)

Write the formula of seasonal variation.

Question No: 47   (Marks: 5)

Find trimmed and winsorized mean of the following data:

32, 36,37,39,36,43

Question No: 48   (Marks: 5)

Using the formula   find the coefficient of linear correlation with the help of given table

X	5	6	8	9
Y	6	7	9	10

Question No: 49   (Marks: 5)

If the variance of the Poisson distribution is 2, find the probabilities for X=0 and X=1

Question No: 50   (Marks: 10)

Paper 6

SOLVED BY CHANDA REHMAN

FINALTERM EXAMINATION

Fall 2009

MTH302- Business Mathematics & Statistics (Session - 1)

Ref No: 1303902

Time: 120 min

Marks: 80

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

The correlation coefficient between *x* and *y* shows

    ► Whether *y* depends on *x*

    ► whether *x* causes *y*

► **whether there is any relation between *x* and *y***

► whether there is a linear relation between *x* and *y*

Question No: 2   (Marks: 1)   - Please choose one

If the basic salary is Rs 6500 and the social charges are Rs 1820, what percentage of basic salary are the social charges?

► 27 %

► **28 %**

► 29 %

► 30 %

Question No: 3   (Marks: 1)   - Please choose one

Scatterplots, like histograms, are a good visual means to understanding patterns of

► onevariate numerical data

► **bivariate numerical data**

► Trivariate numerical data

► None of these

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

The formula for y-intercept 'b' in the regression line Y=ax+b can be written

►

►

►

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

There are two graphs G1 and G2. The graph G1 has r = 0.9 and the graph G2 has r = 0.5, then what result do you take out from it?

► G1 is more scattered than G2.

► G1 is less scattered than G2.

► G1 and G2 are equally scattered.

► No result can be drawn from the given data.

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

A, B and C play cricket. A's runs are to B's runs and B's runs are to C's as 3:2.
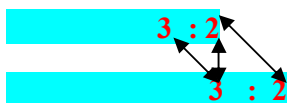They get altogether 342 runs.

How many runs did A make?

► **162**

► 108

► 72

► 112

Solution: A : B : C

3 : 2

3   : 2

9 : 6 : 4

Total: 19

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

Analysis of Variance (ANOVA) is a test for equality of:

► variances

► means

► proportions

► only two parameters

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

In a simple linear regression analysis, the correlation coefficient (r) and the slope (b_1) have the same sign.

► Always

► Sometimes

► **Never**

► Most of the times

Question No: 9   (Marks: 1)   - Please choose one

The sample coefficient of correlation

► (i) is the square of the coefficient of correlation.

► (ii) cannot be negative.

► (iii) reports the percent of the variation in the dependent variable explained by the independent variable.

► (iv) All (i),(ii) and (iii) are correct.

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

The equation of the regression line is 2y + 5x - 3 = 0. What will be the slope and intercept of the line?

► slope = -5, intercept = 3

► slope = 5, intercept = -3

► **slope = -2.5, intercept = 1.5**

► slope = 2.5, intercept = -1.5

Solution: 2y + 5x – 3 = 0

Y= 3 – 5x /2 = y = 1.5 – 2.5x (y =a+ bx) a= intercept b= slope

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

Which is incorrect?

► The mode is a measurement that records value

► **A bar graph is same as line graph**

► A mean may cause distortions

► A circle graph is based on 360∞

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

Which one of the following is **not** a component of the multiplicative time series model

► trend

► irregular variation

► **regression trend**

► seasonality

► cyclicity

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

How many ways can 10 letters be posted in 5 post boxes, if each of the post boxes can take more than 10 letters?

► **5^10**

► 10^5

► 10P5

► 10C5

Ref

: http://www.bestsamplequestions.com/psat-sample-questions/psat-sample-math-questions/psat-sample-multiple-choice-questions/psat-sample-multiple-choice-questions-15.html

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

Evaluate

► 0

► 10

► 120

► **720**

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

-------------- measures the strength of the linear relationship between the dependent and the independent variable.

► **Simple correlation coefficient**

► Distance value

► Y intercept

► Normal plot

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

Probability of an event lies between

►

►

►

►

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

A box contains 3 red balls, 4 green balls, and 5 blue balls. One ball is taken from the drawer and then replaced. Another ball is taken from the drawer.

What kind of probability is it?

► (a) Exclusive Probability

► (b) Independent Probability

► (c) Dependent Probability

► (d) Both (a) and (c)

Question No: 18   (Marks: 1)   - Please choose one

Which of the following is NOT a possible probability?

► 25/100

► **1.25**

► 1

► 0

Question No: 19   (Marks: 1)   - Please choose one

The --------------- is intended to measure the spread of the data about the mean.

► mean

► median

► **mode**

► standard deviation

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

The equation for the correlation coefficient is   where

►

►

►

►

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

Syntax for the Poisson distribution is

► **POISSON(x, mean, cumulative)**

► POISSON(x, mode, cumulative)

► POISSON(x, median, cumulative)

► POISSON(x, y, mean, cumulative)

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

The negative of the negative of an odd number is

► negative

► **positive**

► the odd number

► does not exist

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

If for the next 8 years you save Rs. 20,000 per six months then how much will you have accumulated at the end of 8 years. Payments are to be made at the end of each annuity period, assume an interest of 8% compounded quarterly?

Which function can give you correct answer of above question?

► FV(0.08, 8, 20000, 0,0)

► FV(0.08, 8, 20000, 0, 1)

► **FV(0.08/2, 8*4, 20000, 0, 0)**

► PV(0.08/2, 8*4, 20000, 0, 0)

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

 Break Even point is a point at which neither a profit nor ----- is made.

► Gain

► **Loss**

► Sale

► cost

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

This example returns the depreciation for an asset that costs Rs. 10,000, with a salvage value of $6,000. The useful life of the asset is 4 years. The depreciation is being calculated for the first year, and there are 12 months in the first year.

▶ **=DB (10000, 6000, 4, 1, 12)**

▶ =DB (10000, 6000, 4, 12, 1)

▶ =DB (6000, 10000, 4, 12, 1)

▶ =DB (10000, 6000, 4, 1, 1)

See page 127

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

Product: =

▶

▶

▶

▶

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

Number of 5 permutations of 5 different objects taken 5 at a time is......

► **5!**

► 6!

► 0!

► 4!

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

New forecast =......

► **Old forecast + proportion of errorα..**

► Old forecast - proportion of error α

► Old forecast * proportion of error α

► Old forecast / proportion of error α

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

An equation for the intercept of the regression line is:

►   (correct)

►

►

►

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

The result of BINOMDIST is #NUM. Why?

► One parameter is missing.

► Fourth parameter is FALSE

► The number of successes should be negative.

► Probability of success on each trial should be less than 1.

Question No: 31   (Marks: 1)   - Please choose one

For two tail test, when   the value of Z is

►   1.96

►   1.645

► 2.326

► 2.575

Question No: 32   (Marks: 1)   - Please choose one

The graph of the normal distribution depends on --------------------

► Harmonic mean

► Standard Deviation only

► Harmonic Mean and Standard Deviation

► **Mean and Standard Deviation**

Question No: 33   (Marks: 1)   - Please choose one

A regression equation was computed to be Y = 35 + 6X,the value of 35 indicates that

► An increase in one unit of X will result in an decrease of 35 in Y

► The coefficient of correlation is 35

► The coefficient of determination is 35

► The regression line crosses the Y-axis at 35

Question No: 34   (Marks: 1)   - Please choose one

How many types of measure of dispersion

► 2

► 3

► 4

► 5

Question No: 35   (Marks: 1)   - Please choose one

Probability of a person's death in a year

► **1/365**

► 0

► 1

► Undetermined

Question No: 36   (Marks: 1)   - Please choose one

A polynomial: is a special case of

► bi-nomial

► tri-nomial

► None of these as expression is incorrectly expressed.

► mono-nomial

Question No: 37   (Marks: 1)   - Please choose one

 A basic published or advertised price is known as…..….

► **List price**

► new price

► list price

► none of these

Question No: 38   (Marks: 1)   - Please choose one

The conversion of Markup on cost price to Markup on Sale price is measured as

► %Markup on cost = % Markup on S / (1 - % Markup on C)

► %Markup on cost = % Markup on S / (1 - % Markup on S)

► %Markup on cost = % Markup on C / (1 - % Markup on C)

► None of these

Question No: 39   (Marks: 1)   - Please choose one

The parameters of binomial distribution are

► **n & p**

► x & p

► n & x

► n & q

Question No: 40   (Marks: 1)   - Please choose one

The formula for Poisson Distribution is   -------------------------------

►

► b*(x; r, P) = $_{x-1}C_{r-1}$ * P^r * $(1 - P)^{x - r}$

►

► None of the above.

Question No: 41   (Marks: 2)

From the given data,

Week no.	Actual sales	Forecast
1	4500	-
2	4000	4500

Find the forecast for the 1st week.

Question No: 42   (Marks: 2)

What is the difference between these formulae?

a)

b)

Question No: 43   (Marks: 2)

What will be the

Question No: 44   (Marks: 3)

Find the mean and mode of the following data 2 , 5,2 , 3 ,8, 5 , 7 , 8.

Mean = 2+5+2+3+8+5+7+8= 40 / 8 = 5

Mode= 2, 5, 8

Question No: 45   (Marks: 3)

 Two firms compete for contracts.A has probability of 3/4 of obtaining one contract.B has probability of 1/4.What is the probability that when they bid for two contracts, firm A will obtain either the first or second contract?

P(B gets first) x P(B gets second) = 1 / 4 * 1 / 4 = 1/16

P(A gets one or both) = 1 - 1/16 = 15/16.

Question No: 46   (Marks: 3)

 In linear programming, what is meant by feasible region?

Question No: 47   (Marks: 5)

Find the variance and standard deviation of the following numbers: 1, 3, 5, 5, 6, 7, 9, 10 .

X mean = 1+3+5+5+6+7+9+10 = 46 / 8 = 5.75

1 – 5.75 = - 4.75 = 22.56

3 – 5.75 = - 2.75 = 7.56

5 – 5.75 = -.75= .56

5 – 5.75 = - .75 = .56

6 – 5.75 = .25 = .06

7 – 5.75 = 1.25 = 1.56

9 – 5.75 =3.25

10 – 5.75 = 4.25

    1628.29 / 7

Question No: 48   (Marks: 5)

 Use the given data to find the equation of the regression line. Round the final values to three significant digits, if necessary.

x	y
1	143
3	116
5	100
7	98
9	90

Question No: 49   (Marks: 5)

 The ages of 5 students in a population are 12, 16, 10, 14 and 13. Considering all possible samples of size two which can be drawn with replacement from this population, find

◻◑   The mean age.

▤◑   The standard deviation of the students.

Question No: 50   (Marks: 10)

The number of phone calls at a call centre per minute is 7. What is the probability that on a given minute there will be more than 8 phone calls?

Paper 7

SOLVED BY CHANDA REHMAN

FINALTERM EXAMINATION

Fall 2009

MTH302- Business Mathematics & Statistics

Time: 120 min

Marks: 80

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

In regression analysis, when we plot the values of dependent and independent variables, the resulting set of points is called

► **Scatter Diagram**

► Venn diagram

► Histogram

► Pie Graph

Question No: 2   (Marks: 1) - Please choose one

Slope of the line passing through the points A (2, 3) and B (3, 4) is

► Zero

► **One**

► Two

► Three

Question No: 3   (Marks: 1) - Please choose one

A significant value of a correlation coefficient calculated from a sample of data

(x, y) implies that

► x causes y

► y causes x

► x and y have a curved relationship

► **x and y have a relationship with a strong linear component**

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

The measure of how well the regression line fits the data is the:

► coefficient of determination

► **slope of the regression line (doubt)**

► mean square error

► standard error of the regression coefficient

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

What is the slope of the line y = -3.4x - 2.5?

► -2.5

► 2.5

► **-3.4**

► 3.4

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

My estimated regression line is $Y = 17 + 4X$. The intercept is equal to:

► **17**

► 4

► 21

► 13

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

How many arrangements can be made of the letter MOVING

► 900

► 120

► 600

► **720**

Ref 6! =720

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

Which of the following statements is true regarding the standard deviation?

► It cannot assume a negative value.

► If it is zero, then all the data values are the same

► It is in the same units as the mean.

► **All the given choices are correct**

Question No: 9   (Marks: 1) - Please choose one

There are 5 Rock songs, 6 Carnatic songs and 3 Indian pop songs. How many different albums can be formed using the above repertoire if the albums should contain at least 1 Rock song and 1 Carnatic song?

► 15624

► 16384

► 6144

► 240

ref

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

In what range does correlation coefficient lie?

► 0 to +1

► -1 to 0

► **-1 to +1**

► Greater than 1

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

Which of the following describe the middle part of a group of numbers?

► Measures of central tendency

► measures of variability

► measures of shape

► measures of association

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

Evaluate

► 0

► 10

► 120

► <mark>720</mark>

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

Evaluate

► n

► <mark>one</mark>

► Zero

►

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

A large basket of fruit contains 3 oranges, 2 apples and 5 bananas. If a piece of fruit is chosen at random, what is the probability of getting an orange or a banana?

► 1/2

► 5/4

► <mark>4/5</mark>

► 1/7

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

In the United States, 43% of people wear a seat belt while driving. If two people are chosen at random, what is the probability that both of them wear a seat belt?

► 18%

► 20%

► 25%

► None of these

Solution (.43) (.43) =.18

 Ref: http://www.vkg.werro.ee/aivar/toen/kordamine.htm

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

The formula to calculate Mean squared deviation from the mean is

►

►

►

►

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

Suppose we developed the following least squares regression equation: $Y = 3 + 2X$. Which of the following statements are correct?

► The dependent variable increases 2 for an increase of 1 in X

► The equation crosses the *Y*-axis at 3.5

► If *X* = 5, then *Y* = 14.

► Y is independent variable

Question No: 18   (Marks: 1) - Please choose one

The median in an odd number of values is the ------------ value.

► first

► middle

► last

Question No: 19   (Marks: 1) - Please choose one

The ----------------- indicates where the center of data occurs without distorting a group of numbers with one or more extreme values.

► median

► mode

► mean

► quartile

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

The ---------------- is intended to measure the spread of the data about the mean.

► mean

► median

► mode

► standard deviation

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

In which of the following form, can the probability be written?

► fraction

► decimal

► percentage

► <mark>All of these.</mark>

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

Principal remains constant through out the agreement period in:

► Compound interest

► Annuity

► <mark>Simple interest</mark>

► Nominal interest

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

If A and B are any two matrices of order   and   respectively
   and *m>n* and *p*. What should be the condition on *m, n, p, q*
   for the product AB to hold?

► n>p

► <mark>m<=q</mark>

► q=p

► n=p

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

If the salary of an employee is 10,000 and his allowances are 5,000 then what is the taxable income of the employee?

► 5,000

► 10,000

► <mark>Zero</mark>

► 15,000

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

The mode of the words in the word CORRELATION is

► L

► R

► O

► Both R and O

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

The correct relation among the %markup on cost, cost price and selling price is

► Selling Price = Cost price + (Cost price × %Markup on sale)

► Selling Price = Cost price + (Cost price × %Markup on cost)

► Cost Price = selling price + (Cost price × %Markup on cost)

► None of these

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

To add numbers based on multiple conditions we use

► IF and SUM functions .

► DSUM function.

► AVERAGE function.

► All functions given in above choices .

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

If A= [a b c] is a matrix then in order to find AB, the number of columns B must have are

► 3

► 1

► 2

► any non zero number

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

Given FC = Rs.5000 ,CM= Rs. 30 ,VC= Rs. 150 , Capacity = 320units then BEP in units =

► 4500 units

► **167 units**

► 33 units

► 16 units

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

Actual = …

► Random - expected

► Random * expected

► Random + expected

► Random / expected

Question No: 31   (Marks: 1) - Please choose one

An equation for the intercept of the regression line is:

▶

▶

▶

▶

Question No: 32   (Marks: 1) - Please choose one

The ratio of the standard deviation of a distribution to the mean of that distribution is referred to as

► a probability distribution.

► the expected return.

► the standard deviation.

► coefficient of variation.

Question No: 33   (Marks: 1) - Please choose one

Coefficient of variation shows dispersion of the

► standard deviation about mean.

► **standard deviation about mode.**

► variance about mean.

► variance about mode.

Question No: 34   (Marks: 1) - Please choose one

The Excel function =**POISSON (2, 5, True)** is used to calculate -----------
----

► Normal Distribution

► Binomial Distribution

► Poisson Distribution

► Cumulative Poisson Distribution

Question No: 35   (Marks: 1) - Please choose one

The graph which uses circles to represent a set of data is called

► Travel graph

► Picture graph

► Sector graph

► Cumulative distribution

Question No: 36   (Marks: 1) - Please choose one

Is every Linear Programming has solution?

► true

► false

► may or may not

► none of these

Question No: 37   (Marks: 1) - Please choose one

Returns the cumulative interest paid on a loan between start period and end period is ………

► CUMIPMT

► CUMPRINC

► FV

► PV

Question No: 38   (Marks: 1) - Please choose one

The price after deduction of all discounts or allowances is known as…….

► net price

► new price

► list price

► none of these

Question No: 39   (Marks: 1) - Please choose one

Net income can be calculated by using

► Net income = Number of units sale above break even point * Price per unit

► Net income = Total number of units sold * Price per unit

► Net income = Number of units sale above break even point * contribution margin per unit

► Net income = Total number of units sold * contribution margin per unit.

Question No: 40 **(Marks: 1) - Please choose one**

A single die is rolled.What is the probability of a 2 turning up.

► The answer is 1/6

► The answer is 2/6

► The answer is 0

► The answer is 1

Solution:

a single die is rolled S = {1,2,3,4,5,6} so total = 6, 2turningup =1 so 1/6

Question No: 41 **(Marks: 2)**

If Y = 5 + b X, find the value of b when Y = 9 and x = 2.

Solution:

Y=5+b X

Y-5=b X

b = (Y-5)/X

Putting the given value:

b = (9-5)/2

b = 4/2

b= 2   Ans.

Question No: 42   (Marks: 2)

What is most common measure of central tendency and how it is calculated?

Answer:

Central Tendency refers to middle value and most common measure of central tendency is the "Mean".

Mean is calculated as follows:

Mean= (The sum of all values)/(The Number of Values)

Question No: 43   (Marks: 2)

In which condition none of the hypothesis testing procedures can be safely used.

Answer:

In the null hypothesis we don't consider about proving null hypothesis and we must begin with assumption that there is no change at all.

Question No: 44   (Marks: 3)

A local trade union consists of plumbers and electricians. Classified according to rank:

```
              Apprentice   Journeyman     Master

              --------------------------------------

 Plumbers         25     |    20     |   30      75

              --------------------------------------

 Electricians    15     |    40     |   20      75

              --------------------------------------

                 40          60          50
```

A member of the union is selected at random. Given that the

Person selected is a plumber, find the probability that he is a

Question No: 45   (Marks: 3)

Calculate the mean deviation from mean = 30 of the following set of examination marks

28,30,32

Solution:

x	x-mean	$|x-mean|$
28	28-30=-22	
30	30-30=00	
32	32-30=22	
	4	

$$M.D = \frac{\sum |x - mean|}{n}$$

$$M.D = \frac{4}{3}$$

$$M.D = 1.3333$$

Question No: 46   (Marks: 3)

If a pollster might want to know whether or not, say, the sex, the ethnic background or salary range of a person is factor in his or her vote in

election or for some type of legislation then justify which distribution is best fit for this scenario?(least two sentence description)

Question No: 47   (Marks: 5)

Find the mean, median, mode, and range for the following list of values:

1, 2, 4, 7

Answer:

1.   Mean   = (1+2+4+7)/4

                =14/4

                =3.5

2.   Median   =(n+1)/2

                =(4+1)/2

                =5/2

                =2.5th Value is the median

We take average of 2nd and 3rd Value.

                =(2+4)/2

                =6/2

Median   **=3**

3.   Mode   = None

4.   Range   = Maximum Value-Minimum Value

                = 7-1= **6**

Question No: 48   (Marks: 5)

A die is rolled and a coin is tossed, find the probability that the die shows an odd number and the coin shows a head

Answer:

Die show odd number = 3/6

Coin Shows a head = 1/2

Probability of odd number and head of coin =3/6 x 1/2

$$=3/12$$

$$=1/4$$

Question No: 49   (Marks: 5)

A random sample of 36 drinks from a soft drink machine has an average content 7.6 ounces with an standard deviation of 0.48 ounces. Test the hypothesis   ounces against the alternative hypothesis   at the 0.05 level of significance.

Question No: 50   (Marks: 10)

The probability that a student is accepted to a prestigeous college is 0.3. If 5 students from the same school apply, what is the probability that at most 2 are accepted