Started on	Sunday, 19 December 2021, 4:59 PM
State	Finished
Completed on	Sunday, 19 December 2021, 5:40 PM
Time taken	40 mins 51 secs
Marks	19.00/25.00
Grade	**7.60** out of 10.00 (**76**%)

Question 1

Correct

Mark 1.00 out of 1.00

Over a period of one year, a greengrocer sells tomatoes at six different prices (x pence per kilogram). He calculates the average number of kilograms, y, sold per day at each of the six different prices. From these data the following are calculated

$$\sum x_i = 200, \sum y_i = 436,$$
$$\sum x_i y_i = 12515, \sum x_i^2 = 7250, \sum y_i^2 = 39234, n = 6.$$

Estimate the correlation coefficient.

a. -0.692

b. 0.962

c. 0.692

d. None of the other choices is correct

e. -0.962

Your answer is correct.

The correct answer is:
-0.962

Question 2

Incorrect

Mark 0.00 out of 1.00

If there is a very strong correlation between two variables then the correlation coefficient must be

a. much smaller than 0, if the correlation is negative

b. much larger than 0, regardless of whether the correlation is negative or positive

c. None of these alternatives is correct ✖

d. any value larger than 1

Your answer is incorrect.

The correct answer is:
much smaller than 0, if the correlation is negative

Question 3

Correct

Mark 1.00 out of 1.00

A random sample of n=25 observations was made on the time to failure of an electronic component and the temperature in the application environment in which the component was used. Given that r=0.72, test the hypothesis that ρ=0, using α =0.05. Let t_0.025,23 =2.069.

a. Reject H0 ✔

b. Do not reject H0

Your answer is correct.

The correct answer is:
Reject H0

Question **4**

Incorrect

Mark 0.00 out of 1.00

The following is Excel output of a simple regression model.

SUMMARY OUTPUT			
Regression Statistics			
R Square	0.273484848		
Observations	7		
ANOVA			
	df	*SS*	*MS*
Regression	1	5.157142857	
Residual		13.7	2.74
Total	6	18.85714286	
	Coefficients	*Standard Error*	*t Stat*
Intercept	11.2	3.226763084	3.470970663
X Variable 1	-0.475	0.346229693	-1.371921618

What is the value of the test statistic for testing whether the regression intercept coefficient is equal to 10?

a. 0.37

b. 4.02

c. 3.47

d. 2.15

e. None of the other choices is true

Your answer is incorrect.

The correct answer is:
0.37

Question 5

Correct

Mark 1.00 out of 1.00

In a simple linear regression model the slope coefficient measures_____

- a. the change in Y which the model predicts for a unit change in X ✔
- b. the change in X which the model predicts for a unit change in Y
- c. None of the other choices is correct
- d. the value of Y for any given value of X
- e. the ratio Y/X

Your answer is correct.

The correct answer is:
the change in Y which the model predicts for a unit change in X

Question 6

Correct

Mark 1.00 out of 1.00

In regression, the equation that describes how the response variable 👍 is related to the explanatory variable (x) is:

- a. used to compute the correlation coefficient
- b. None of these alternatives is correct
- c. the regression model ✔
- d. the correlation model

Your answer is correct.

The correct answer is:
the regression model

Question 7

Incorrect

Mark 0.00 out of 1.00

The height y and base diameter x of five tree of a certain variety produced the following data

x	2	2	3	5
y	31	36	94	127

Find the equation of the estimated regression line $\hat{y} = a + bx$ of y on x.

- a. -21.5x + 31.17
- b. 21.5+31.17x
- c. None of the other choices is correct
- d. 21.5x+31.17
- e. -21.5+31.17x

Your answer is incorrect.

The correct answer is:
-21.5+31.17x

Question 8

Correct

Mark 1.00 out of 1.00

A regression analysis between sales (in $1000) and price (in dollars) resulted in the following equation:

y= 50,000 - 8x.

The above equation implies that an

a. increase of $8 in price is associated with an increase of $8,000 in sales

b. increase of $1 in price is associated with a decrease of $8 in sales

c. increase of $1 in price is associated with a decrease of $42,000 in sales

d. increase of $1 in price is associated with a decrease of $8000 in sales ✔

Your answer is correct.

The correct answer is:
increase of $1 in price is associated with a decrease of $8000 in sales

Question 9

Correct

Mark 1.00 out of 1.00

Two different tests are designed to measure employee productivity and dexterity. Several employees are randomly selected and tested with these results.

Productivity,x	3 5 8 2 1
Dexterity,y	9 3 9 4 7

Find the equation of the regression line.

a. $\hat{y} = 10.7+1.53x$

b. None of the other choices is correct

c. $\hat{y} = 5.49+0.24x$ ✔

d. $\hat{y} = 2.36+2.039x$

e. $\hat{y} = 75.3-0.329x$

Your answer is correct.

The correct answer is:
$\hat{y} = 5.49+0.24x$

Question 10

Correct

Mark 1.00 out of 1.00

A Company has just brought out an annual report in which the capital investment and profits were given for the past few years.

Capital investment, x	10	12	18	25
Profits, y	15	14	23	38

Assume that an unbiased estimator for variance of the error is 8.34.

Find an estimated standard error for slope of regression line.

a. 0.12

b. 2.89

c. 0.02

d. 0.03

e. None of them

Your answer is correct.

0.246955

The correct answer is:
None of them

Question 11

Correct

Mark 1.00 out of 1.00

The correlation coefficient is used to determine:

a. None of these

b. A specific value of the y-variable given a specific value of the x-variable

c. A specific value of the x-variable given a specific value of the y-variable

d. The strength of the relationship between the x and y variables ✔

Your answer is correct.

The correct answer is:
The strength of the relationship between the x and y variables

Question 12

Correct

Mark 1.00 out of 1.00

The residuals represent

a. the predicted value of Y for the average X value.the square root of the slope

b. the predicted value of Y for the average X value.

c. None of the other choices is correct

d. the difference between the actual Y values and the predicted Y values. ✔

e. the difference between the actual y values and the mean of Y.

Your answer is correct.

The correct answer is:
the difference between the actual Y values and the predicted Y values.

Question 13

Incorrect

Mark 0.00 out of 1.00

The relationship between number of beers consumed (x) and blood alcohol content 👍 was studied in 16 male college students by using least squares regression. The following regression equation was obtained from this study:

y= -0.0127 + 0.0180x.

The above equation implies that:

a. on average it takes 1.8 beers to increase blood alcohol content by 1%

b. each beer consumed increases blood alcohol by 1.27%

c. each beer consumed increases blood alcohol by an average of amount of 1.8%

d. each beer consumed increases blood alcohol by exactly 0.018 ✖

Your answer is incorrect.

The correct answer is:
each beer consumed increases blood alcohol by an average of amount of 1.8%

Question **14**

Correct

Mark 1.00 out of 1.00

SSE can never be

- a. larger than SST ✔
- b. equal to zero
- c. smaller than SST
- d. equal to 1

Your answer is correct.

The correct answer is:
larger than SST

Question 15

Correct

Mark 1.00 out of 1.00

Test for significance of regression is the test of....

a. None of others

b. H0: $\beta 0 = 0$ versus H1 : $\beta 0 \neq 0$

c. H0: $\beta 1 = 0$ versus H1 : $\beta 1 \neq 0$ ✔

Your answer is correct.

The correct answer is:
H0: $\beta 1 = 0$ versus H1 : $\beta 1 \neq 0$

Question 16

Incorrect

Mark 0.00 out of 1.00

Suppose data is obtained from 20 pairs of (x,y) and the sample correlation coefficient is 0.75. Test the hypothesis that H0: $\rho=0.5$ against H1: $\rho>0.5$ with $\alpha=0.05$. Let $z_{0.025}=1.96$; $z_{0.05}=1.65$.

a. Reject H0

b. Do not reject H0 ✖

Your answer is incorrect.

The correct answer is:
Reject H0

Question 17

Correct

Mark 1.00 out of 1.00

Given the equation of a regression line is y= 3.5x - 5.4, what is the best predicted value for y given x = - 1.2 .Assume that the variables x and y have a significant correlation.

a. -6.9

b. 12.3

c. -9.6

d. -12.3

Your answer is correct.

The correct answer is:
-9.6

Question 18

Correct

Mark 1.00 out of 1.00

Regression modelling is a statistical framework for developing a mathematical equation that describes how

- a. one response and one or more explanatory variables are related ✔
- b. several explanatory and several response variables response are related
- c. All of these are correct
- d. one explanatory and one or more response variables are related

Your answer is correct.

The correct answer is:
one response and one or more explanatory variables are related

Question 19

Correct

Mark 1.00 out of 1.00

In a regression analysis if SSE = 200 and SSR = 300, then the coefficient of determination is

- a. 0.4000
- b. 0.6000 ✔
- c. 0.6667
- d. 1.5000

Your answer is correct.

The correct answer is:
0.6000

Question 20

Correct

Mark 1.00 out of 1.00

Regression analysis was applied to return rates of sparrow-hawk colonies. Regression analysis was used to study the relationship between return rate (x: % of birds that return to the colony in a given year) and immigration rate (y: % of new adults that join the colony per year). The following regression equation was obtained.

$y = 31.9 - 0.34x$.

Based on the above estimated regression equation, if the return rate were to decrease by 10% the rate of immigration to the colony would:

- a. increase by 3.4% ✔
- b. decrease by 3.4%
- c. decrease by 0.34%
- d. increase by 34%

Your answer is correct.

The correct answer is:
increase by 3.4%

Question 21

Incorrect

Mark 0.00 out of 1.00

In regression analysis, the variable that is used to explain the change in the outcome of an experiment, or some natural process, is called

- a. the predictor variable ✖
- b. the x-variable
- c. all of the above (a-d) are correct
- d. none are correct
- e. the explanatory variable
- f. the independent variable

Your answer is incorrect.

The correct answer is:
all of the above (a-d) are correct

Question 22

Correct

Mark 1.00 out of 1.00

In a regression and correlation analysis if r^2 = 1, then

- a. SSR = SST ✔
- b. SSR = SSE
- c. SSE = SST
- d. SSE = 1

Your answer is correct.

The correct answer is:
SSR = SST

Question 23

Correct

Mark 1.00 out of 1.00

Which correlation coefficient represents the strongest association between the X and Y variables?

a. r = 0.2

b. r = - 0.5

c. r = 0.6 ✔

d. r = - 0.3

Your answer is correct.

The correct answer is:
r = 0.6

Question 24

Correct

Mark 1.00 out of 1.00

Suppose data is obtained from 20 pairs of (x, y) and the sample correlation coefficient is 0.7. Find the test statistic if you want 95% confident that there exist a significant positive linear correlation between x and y.

a. 0.05

b. 4.27

c. 4.16 ✔

d. None of the other choice is correct

e. 4.38

Your answer is correct.

The correct answer is:
4.16

Question 25

Correct

Mark 1.00 out of 1.00

If the coefficient of determination is 0.81, the correlation coefficient

a. must be negative

b. is 0.6561

c. must be positive

d. could be either +0.9 or -0.9

Your answer is correct.

The correct answer is:
could be either +0.9 or -0.9

« »