Test Code: L2 R04 CORE Q-Bank Set 2

Number of questions: 8

Question		Q-Code: L2-QM-CORE-022	LOS c	Section 4

1 **The following information will be used in next 3 questions.**

Phillipe Nouvier, a quantitative analyst, is asked to assess the variation in the stock returns of DMG Motors. Nouvier runs a simple linear regression of DMG's stock's returns against the returns of the S&P index. He uses the last five year monthly data for his model. Table 1 shows the results of his analysis.

Table 1: Return Performance of DMG stock against S&P Index Returns 2011-2016

Regression Statistics	
Multiple R	0.9244
R-squared	0.8545
Standard error of estimate	
Observations	60

ANOVA	Degrees of Freedom (df)	Sum of Squares (SS)	Mean Sum of Squares (MSS)
Regression	1	0.1046	0.1046
Residual	58	0.0178	0.0003
Total	59	0.1224	

	Coefficients	Standard Error	t-statistic
Intercept	0.0008	0.0021	0.3809
S&P return	0.8203	0.0444	18.4886

Nouvier presents the results of his analysis to his supervisor with the following inferences:

I. The regression intercept is not statistically significant.
II. The S&P Index return and the DMG stock return exhibit a positive correlation.
III. The t-statistic shows that the true value of the slope coefficient is actually 0.

Nouvier's supervisor asks: "What would DMG's return be in a month when the return on the S&P index is 0.06623?"

The standard error of estimate of the regression model in Table 1 is *closest* to:

A) 0.0175
B) 0.0178.
C) 0.0003.

Question		Q-Code: L2-QM-CORE-023	LOS d	Section 6

2 Phillipe Nouvier, a quantitative analyst, is asked to assess the variation in the stock returns of DMG Motors. Nouvier runs a simple linear regression of DMG's stock's returns against the returns of the S&P index. He uses the last five year monthly data for his model. Table 1 shows the results of his analysis.

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Which of Nouvier's inferences regarding the regression model is *least likely* correct?

A) I

B) II

C) III

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The predicted value of DMG's stock return for the S&P index return of 0.06623 is *closest* to:

A) 0.032
B) 0.055.
C) 0.064.

4   **The following information relates to question 8.**

Sonia Ahsan, a research analyst at Toplink Securities, is evaluating the behavior of the total return of GLI Corp.'s stock with respect to the total return of a local large cap market index. She uses the firm's software to conduct a regression analysis of the variables to understand the relationship between them. The result of the analysis is given in Table 4.

Table 4: Results of the Simple Regression

Regression Statistics	
Multiple R	0.9284
R-squared	0.8619
Standard error of estimate	0.0181
Observations	60

ANOVA	Degrees of Freedom (df)	Sum of Squares (SS)
Regression	1	0.1192
Residual	58	0.0191
Total	59	0.1383

	Coefficients	Standard Error	t-statistic
Intercept	0.000500	0.000445	1.1215

b$_1$	0.800500	0.042153	19.0060

Based on the result given above, the F-statistic to test whether the slope coefficient is different from 0 is *closest* to:

A) 361.97

B) 180.04.

C) 19.01.

5   **The following information relates to next 3 questions.**

Hannah Kiev is an analyst at an investment bank with clients primarily from emerging market countries. She is investigating the relationship between emerging market equity returns and U.S. Treasury bills over the last five years. Kiev collects the five year monthly data to regress the monthly total returns of Sensex on one-month U.S. Treasury Bills. Kiev uses the natural logarithms of one plus the monthly returns in the regression calculation for both Sensex and U.S. Treasury Bills. The results of the regression are shown in Table 5 and Table 6.

Table 5: Regression of Sensex on U.S. Treasury Bills

Regression Statistics	
Multiple R	0.1988
R-Squared	0.0395
Standard error	0.0885
Observations	60

Table 6: Regression of Sensex on U.S. Treasury Bills

ANOVA	Degrees of Freedom (df)	Sum of Squares (SS)	Mean sum of Squares (MSS)	F	Significance F
Regression	1	0.0187	0.0187	2.388	0.1185
Residual	58	0.4542	0.0078		
Total	59	0.4729			

	Coefficients	Standard Error	t-statistic	p-value	Lower 95%	Upper 95%
Intercept	0.0665	0.0328	2.027	0.0498	0.001	0.132
U.S. T-bills	-2.8026	1.8199	-1.540	0.1185	-6.442	0.837

Based on the information given in Tables 5 & 6, the *most* accurate interpretation is:

A) U.S. Treasury bills have a statistically significant linear relationship with Sensex returns.

B) there is a small but positive correlation between Sensex and U.S. T-bills.

C) The variation in U.S. T-bills does not explain the variation in Sensex returns.

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Using Table 6, and two-tail t-tests to determine if the coefficients are equal to zero, at the 0.05 significance level, the null hypotheses are *most likely*:

A) rejected for both the intercept and the slope.
B) accepted for the slope but rejected for the intercept.
C) accepted for the intercept but rejected for the slope.

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Using the regression equation given in Table 6, if the U.S.T-bill is 2% thus ln(1+ 0.02) = 0.0198, the predicted value of the Sensex return is *closest* to:

A) 2.01%.

B) 1.10%.

C) 0.90%.

8   **The following information relates to next question.**

During one of her lectures, Hala Amman, a finance professor points out that regression is used in analysis in finance. As an exercise, Amman presents the results of a regression of returns (R_t) of the Brazilian stock exchange against the US dollar/Brazilian real exchange rate (E_t). The data covers 64 daily observations in the study. Table 7 reports the results of the regression.

Table 7: **Regression Results: $R_t = b_0 + b_1 E_t + \varepsilon_t$**

	Coefficient	Standard Error
Constant (b_0)	0.0027	0.0049
USD/BRL exchange rate (b_1)	-0.3180	0.1272
Number of observations	64	

Critical *t*-value at the 5% level of significance (two-tailed test that the coefficient equals zero)	2

In the regression results presented above, the coefficient of the USD/BRL exchange rate is *most accurately* described as:

A) Significantly different from zero
B) not significantly different from zero.
C) indeterminate because of insufficient information.