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Fourth SEMESTER

END SEMESTER (SUPPLEMENTARY EXAMINATION)

MGF-08

Financial Modeling and Analysis

Time: 03:00 Hours

Max. Marks:60

Note : Answer any five questions
Marks are indicated along with the questions
Assume suitable missing data, if any.

Q.1 a) What are the three types of data used for empirical analysis in finance. Explain briefly. **(6 Marks)**

b) Explain the difference between correlation and regression. **(6 Marks)**

Q.2 Explain the assumptions underlying the classical linear regression model. **(12 Marks)**

Q.3 What are dummy variables? Define a multiple regression model using sales as the dependent variable and package design and price as independent variables. Package design is a three-level categorical variable with designs A, B, or C. **(12 Marks)**

Q.4 A survey of the morning beverage market shows that the primary breakfast beverage for 17% of Indians is milk. A milk producer in Gujarat, where milk is plentiful, believes the figure is higher for Gujarat. To test this idea, she contacts a random sample of 550 Gujarat residents and asks which primary beverage they consumed for breakfast that day. Suppose 115 replied that milk was the primary beverage. Determine the degree of freedom and using a level of significance of .05, test the idea that the milk figure is higher for Gujarat. Table value of test statistic is 3.8415. **(12 Marks)**

Q.5 a) Consider the following nonstochastic models. Are they linear regression models? If not, is it possible, by suitable algebraic manipulations convert them into linear models? **(6 Marks)**

a. $Y_i = \dfrac{1}{\beta_1 + \beta_2 X_i}$

b. $Y_i = \dfrac{X_i}{\beta_1 + \beta_2 X_i}$

c. $Y_i = \dfrac{1}{1 + \exp(-\beta_1 - \beta_2 X_i)}$

b) The following regression results were based on monthly data over the period January 2008 to December 2017: **(6 Marks)**

$$\hat{Y}_t = 0.00681 \quad + \quad 0.75815X_t$$

$$se = (0.02596) \qquad (0.27009)$$

$$t = (0.26229) \qquad (2.80700)$$

$$p \text{ value} = (0.7984) \qquad (0.0186) \qquad r^2 = 0.4406$$

$$\hat{Y}_t = 0.76214X_t$$

$$se = (0.265799)$$

$$t = (2.95408)$$

$$p \text{ value} = (0.0131) \qquad\qquad\qquad r^2 = 0.43684$$

where Y = monthly rate of return on a common stock, %, and X =monthly market rate of return,%.

a) What is the difference between the two regression models?

b) Given the preceding results, would you retain the intercept term in the first model? Why or why not?

c) How would you interpret the slope coefficients in the two models?

Q.6 Lockheed Corporation, one of the largest defense contractors in the U.S., reported EBITDA of $1290 million in 1993, prior to interest expenses of $215 million and depreciation charges of $400 million. Capital Expenditures in 1993 amounted to $450 million, and working capital was 7% of revenues (which were $13,500 million). The firm had debt outstanding of $3.068 billion (in book value terms), trading at a market value of $3.2 billion, and yielding a pre-tax interest rate of 8%. There were 62 million shares outstanding, trading at $64 per share, and the most recent beta is 1.10. The tax rate for the firm is 40%. (The treasury bond rate is 7%.) The firm expects revenues, earnings, capital expenditures and depreciation to grow at 9.5% a year from 1994 to 1998, after which the growth rate is expected to drop to 4%. (Capital spending will offset depreciation in the steady state period.) (market risk premium is 5.5%)   3(12 Marks)

a. Estimate the value of the firm.

b. Estimate the value of the equity in the firm and the value per share.