SOMAIYA VIDYAVIHAR UNIVERSITY

Trim: Sep – Nov 24 **Maximum Marks: 50** **Examination: ETE Exam** **Date:11th Jan.,2025** **Duration: 3 Hours**			
Programme code: 10 **Programme: MBA-PT (FM)**		**Class:** TY	**Semester/Trimester: VIII**
College: K. J. Somaiya Institute of Management		**Name of the department/Section/Center: Finance and Law**	
Course Code: 217P10C809		**Name of the Course: Financial Modelling**	

Instructions:

1. **Question No. 1 is compulsory.**
2. **Solve any THREE from the remaining.**
3. **Solve Question 1, 2, and 4 in dataset provided.**
4. **All other questions solve it in Gretl software.**
5. **Output of Gretl put it in word doc and explain it.**

Question No.		Max. Marks
1.	PPG Corporation is a large, diversified manufacturer of chemicals, paints, and glass. The company is the world's largest manufacturer of auto glass. In 2000, PPG had sales of $8.6 billion and a profit of $620 million. The company has over 35000 employees and has continuously paid dividends for 103 years. • Analyze the financial statement of PPG for the years 1991-2000. • Build a pro forma model for the company from 2001-2005. Note: The existing financial statements and assumptions are provided in the Excel sheet "Question 1."	20
2.	Continuing with question 1 above, calculate the value of PPG corporation by using the DCF approach. • Calculate WACC • Calculate FCFF • Calculate the value of a firm • Perform sensitivity analysis on long-term growth rate and WACC and the value of PPG. Note: Use the data from question no. 1 and calculate the value of PPG Corporation in the Excel sheet "Question 2".	10
3.	The data provided in Question 3 data set is about US general time series data. The period covered is from 1947–I to 2007–IV, for 244 quarters, and all data are seasonally adjusted at the annual rate. All the data are collected from FRED, the economic website of the Federal Reserve Bank of St. Louis. GDP, DPI, and PCE are in constant dollars, here 2000 dollars. CP and Dividend are in nominal dollars. The time series we consider are: • DPI = real disposable personal income (billions of dollars) • GDP = gross domestic product (billions of dollars) • PCE = real personal consumption expenditure (billions of dollars) • CP = corporate profits (billions of dollars) • Dividend = dividends (billions of dollars) 1. Consider the data on personal disposable income (DPI). Suppose you want to fit a suitable ARIMA model to these data. Outline the steps involved in carrying out this task. 2. Forecast the values of DPI from 2008-I to 2015-IV.	10
4	You are given the following particulars in respect of HHT Company:	10

Sales price per unit	Rs.15
Quantity sold	900000
Variable cost per unit	Rs.6
Fixed cost	3500000
Depreciation	2000000
Tax rate	25%
Life of project	6 years
Initial investment	12000000

Scrap value	400000
Cost of capital	16.5%
Working capital requirement	1500000

With respect to the details of above investment proposal answer the following questions:

1. Before the project started, HHT paid Rs.20000 to one of the marketing agencies to do a preliminary survey to determine the project's feasibility. Where should HHT Company consider Rs.20000 in project cash flow calculation?
2. By keeping in mind the rule of project cash flow, HHT Company should not consider interest on loans in project cash flow calculation.
3. Previously, the Fixed cost calculated by HHT Company was Rs.4500000, but later on, it was revised to Rs.3500000 due to the reason that Rs.1000000 was attributed to the project, which the company needed to incur even if the company rejected the project. Do you agree that the company should not consider Rs.1000000 in the project cash flow calculation?
4. Perform sensitivity analysis on NPV for the following variables and find out the most sensitive variables:
   - Initial Investment
   - Selling price
   - Variable cost
   - Cost of Capital
   - Fixed cost
   - Sales Volume
5. Now perform the sensitivity analysis for the sales price to be between Rs.13 and 17 and for the variable cost to be Rs.5 and Rs.7.
6. Calculate the NPV breakeven point for the following variables:
   - Selling price
   - Variable cost
   - Fixed cost
   - Sales volume
7. HHT estimated that the project might pass through the worst and best possible scenario as follows:

Input Variables	**Base Case**	**Worst Case**	**Best Case**
Probability	0.4	0.3	0.3
Sales price per unit	15	12	18
Quantity sold	900000	800000	1000000
Variable cost per unit	6	8	4
Fixed cost	3500000	3700000	3300000
Depreciation	2000000	2500000	1500000
Tax rate	25%	30%	20%
Life of project	6	6	6
Initial investment	12000000	12500000	18000000
Scrap value	400000	300000	600000
Cost of capital	16.50%	18%	12%
Working capital requirement	1500000	1600000	1400000

8. Calculate expected NPV, standard deviation, and coefficient of variation, and generate a scenario summary sheet

5	Gives data on three-month (TB3M) and six-month (TB6M) Treasury bill rates from January 1, 1982, to March 2008, for a total of 315 monthly observations. Dataset named as "Question No. 5". • Plot the two-time series in the same diagram. What do you see? • Do a formal unit root analysis to find out if these time series are stationary. • Are the two-time series cointegrated? How do you know? Show the necessary calculations. • What is the economic meaning of cointegration in the present context? If the two series are not co-integrated, what are the economic implications? • If you want to estimate a VAR model, say, with four lags of each variable, do you have to use the first differences of the two series or can you do the analysis in levels of the two series? Justify your answer.	10
6	The data of Indian GDP and PCF from 1950-51 to 1992-93 is provided in dataset named as "Question 6". The variables of data are described below: PCE = Private Final Consumption Expenditure in Domestic Market at 1993-94 prices GDP = Gross Domestic Product at Market Price at 1993-94 prices Fit ARIMA model on both the series and forecast the value of both the series.	10

7	Write Short Notes (Any Two) 1. Mean modeling 2. Multivariate time series analysis 3. Co-integration of time series data	10