

Plot No. 2, Knowledge Park-III, Greater Noida (U.P.) –201306  
**POST GRADUATE DIPLOMA IN MANAGEMENT (2021-23)**  
**END TERM EXAMINATION (TERM -I)**

Subject Name: **Quantitative Techniques for Managers**  
 Sub. Code: **PG14**

Time: **02.30 Hrs.**  
 Max Marks: **40**

**Note:**

**All questions are compulsory. Section A carries 5 marks: 5 questions of 1 marks each, Section B carries 21 marks having 3 questions (with internal choice question in each) of 7 marks each and Section C carries 14 marks one Case Study having 2 questions of 7 marks each.**

**SECTION - A**

Attempt all questions. All questions are compulsory.

**1×5 = 5 Marks**

**Q.1 (A): Differentiate between Nominal, Ordinal, Interval and Ratio Scale with example.**

**Q.1 (B): Which Stock is more consistent?**

	Stock A	Stock B
Average Price	92	98
Variance	49	64

**Q.1 (C): Explain Multiplication Theorem of Probability.**

**Q.1 (D): Discuss the importance of coefficient of Determination ( $R^2$ ) and its interpretation.**

**Q.1 (E): Explain Smoothing in the context of Business Forecasting.**

**SECTION - B**

All questions are compulsory (Each question has an internal choice. Attempt any one (either A or B) from the internal choice)

**7 x 3 = 21 Marks**

**Q.2: A.** The lifetime of certain kinds of electronic devices has a mean of 300 Hrs. and standard deviation of 25 Hrs. Assuming that the distribution is following a normal curve.

a) Find the probability that any one of these electronic devices will have a lifetime of more than 350 hours.

b) What percentage will have lifetimes from 220 to 260 hours?

**OR**

**B.** Explain and categorize the following as Probability and Non-Probability Sampling techniques.

a) Simple Random Sampling b) Stratified Sampling c) Quota Sampling d) Snowball Sampling

**Q.3: A.** Which student should be awarded with the Science scholarship? Take decision using the following tools a) Arithmetic Mean b) Weighted Mean and compare the results.

Subjects	Weights	Student A	Student B
Maths	4	57	62
Physics	3	61	67
Chemistry	2	53	60
English	1	77	49

**OR**

**B.** Find the Variance and Standard deviation for the following distribution

Gross profit as percentage of Sales	60-65	65-70	70-75	75-80	80-85
Number of Companies	200	250	300	350	400

**Q.4: A.** Analyze the difference between Correlation and Regression using examples of the Business Scenarios.

**OR**

**B.** Predict the estimated Production for the year 2020 based on the data using 3-Yearly Moving Average (Smoothing Method)

Year	2010	2011	2012	2013	2014	2015	2016
Production (Quintals)	80	90	92	83	94	99	92

### SECTION - C

Read the case and answer the questions

**7×02 = 14 Marks**

**Q. 5:** Case Study:

A supermarket that has a chain of 15 retail outlets in a city wants to predict the monthly sales of its entire operation based on the performance of all its retail outlets. The number of customers who visited the supermarket during one typical month in all the outlets were recorded along with the money value purchase made by them.

#### **Super Market Data on Its Retail Outlets**

Retail Outlet	Consumers	Sale (Rs Lakh)
1	1814	22.4
2	1852	22.1
3	1012	13.68
4	1482	48.42
5	1578	18.84
6	1778	20.116
7	1748	18.9
8	1020	13.46
9	1058	14.48
10	840	12.24
11	1358	15.26

Question

**Q. 5: (A).** Identifying the dependent and independent variable in this forecast model, Fit a regression model to the data.

**Q. 5: (B).** Predict the Sales (in Rs. Lakh), if the number of customers increase to 2000 in the near future.

#### **Mapping of Questions with Course Learning Outcome**

Question Number	COs	Marks Allocated
Q. 1:	CO1	5 marks
Q. 2:	CO2	7 marks
Q. 3:	CO3	7 marks
Q. 4:	CO3	7 marks
Q. 5:	CO4	14 marks