SHREE NARAYANA COLLEGE OF COMMERCE

AHMEDABAD

Name of the Department: Statistics
Subject: Industrial Statistics
Class & Semester: IV
Faculty Name: Dr.Neeta M.Mandaliya

ASSIGNMENT

SECTION – 1 (UNIT – 1)

Enlist: Time series Analysis

(i)   What is time series? Explain its usefulness.
(ii)   What is meant by analysis of time series? Discuss the various components of time series.
(iii)   Find trend by taking five yearly moving averages from the following time series and also obtain short term fluctuation.

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Sales	110	115	90	80	95	85	75	60	65	70	55	100

SECTION – 2 (UNIT – 2)

Enlist: Business Forecasting

(I)   What is business forecasting? Explain its importance.

(ii)   Fit a straight line to the following data:

Year	1991	1992	1993	1994	1995
Production ('000 tons)	20	35	45	40	25

(iii)   Fit a second-degree parabola to the following observations. Forecast the price for the year 1991

Year	1985	1986	1987	1988	1989	1990
Frequency	26	31	40	51	66	86

SECTION – 3 (UNIT – 3)

Enlist: Process Control Techniques

(i) Give difference between variable charts and attribute charts

(ii) Discuss the causes of variations in a production process.

(iii) Draw $\bar{x}$ and R charts for the following data and state your conclusions. 10 samples each of size 5 are taken.

Sample	1	2	3	4	5	6	7	8	9	10
Mean	35	30	24	20	18	14	28	20	29	22
Range	1	4	3	2	5	9	5	8	3	10

n =5, A_2=0.58, D_3=0 , D_4= 2.12

SECTION – 4 (UNIT – 4)

Enlist: Product Control Techniques

(i) Explain the terms:

(a) AQL, (b) LTPD, (c) Producer's risk, (d) Consumer's risk

(ii) For a single sampling plan (1000,100,1), Find producer's risk and consumer's risk, when AQL=0.02 and LTPD=0.05.[e^{-2}=0.1353, e^{-5}=0.0068]

(iii) What is an Operating Characteristics (O.C) Curve? state its properties.

SECTION – 5 (REVISION & PRACTICE)

Question:

From Unit 1 to Unit 4, draft the following:

(1) In time series, the approximate sum of seasonal variation is_____

(a) 0

(b) 1

(c) 100

(d) 400

(2) The period of seasonal variation is _____

(a) Less then 1 year

(b) 3 years

(c) more than 1 year

(d)1 year

3) If α =0.4, S_1=104, T_1=1.6, then find $\widehat{x_1}$.

4) Write normal equation of linear trend.

5) In attribute charts, the points falling below LCL are called _____spot points

(a) low

(b) High

(c) Medium

(d)None of these

6) When proportion of defective_____ then probability of accepting a lot _____.

(a) Increase and Decrease

(b) Decrease and Increase

(c) Increase

(d)Decrease

7) Producer's risk is denoted by _____ and Consumer's Risk is denoted by____

   (a) α, β

   (b) β, α

   (c) α

   (d) β