

GUJARAT TECHNOLOGICAL UNIVERSITY**M E Semester-II Examination JULY 2012****Subject code: 1721408****Subject Name: RESEARCH METHODOLOGY****Date: 14/07/2012 Time: 10.30 a.m. To 13.00 p.m.****Total Marks: 70****Instructions:**

- 1. Attempt all questions.**
- 2. Make suitable assumptions wherever necessary.**
- 3. Figures to the right indicate full marks.**

- Q1** a) Briefly Describe the different steps involved in a research process **10**
b) Write a short note on : Criteria of Good Research **04**

- Q2** a) Describe fully the techniques of defining a research problem **07**
b) Write a short note on **07**
i. Components of a research Problem
ii. Rephrasing the research Problem

OR

- a) Write a short note on Experience Survey. Explaining fully its utility in exploratory research studies **07**
b) Explain the meaning and significance of a research Design **07**

- Q3** Define Sampling. Under what circumstances we would recommend: **14**
a) A Probability Sample
b) Non probability Sample
c) Stratified sample
d) A cluster Sample

OR

- a) A Population is divided into three strata so that $N_1=5000$, $N_2=2000$ and $N_3=3000$. Respective standard deviations are: **07**
 $\sigma_1=15$, $\sigma_2=18$ and $\sigma_3=5$.
How should a sample of size $n=84$ be allocated to the three strata, if we want optimum allocation using disproportionate sampling design?
b) How would you differentiate Simple Random sampling and complex random sampling **07**

- Q4** a) Explain Ratio Scaling method and its advantage over the other measurement scaling techniques. **07**
b) Describe the different methods of scale construction, point out its merits and demerits of each. **07**

OR

- a) Clearly explain the difference between collection of data through questionnaires and schedules. **07**
b) Write a short note on the following **07**
i. Latin-Square design
ii. F-ratio and its interpretation.

- Q5** a) Set up an analysis of variance table for the following two-way design without repeated values result: **07**

Per Acre Production Data of Wheat

(in metric tones)

Varieties of seeds	A	B	C
Varieties of fertilizers			
W	6	5	5
X	7	5	4
Y	3	3	3
Z	8	7	4

Also state whether variety difference are significant at 5% level.(5% F-limit for $F(2,6)= 5.14$; $F(3,6)= 4.76$.)

- b) What is meant by Multivariate? Explain how it differs from Bivariate analysis **07**

OR

- a) Explain the mechanics of writing a Research Report. **07**
b) Briefly Describe the different types of Report **07**