

GUJARAT TECHNOLOGICAL UNIVERSITY**M.B.A -IInd SEMESTER-EXAMINATION – MAY/JUNE- 2012****Subject code: 820007****Date: 04/06/2012****Subject Name: Research Methodology & Operation Research****Time: 10:30 am – 01:30 pm****Total Marks: 70****Instructions:**

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

Q.1 (a) What is Business Research? What are the good characteristics of good research? **07**

(b) Differentiate the following terms and explain their significance in research **07**

- I. Concept and Construct
- II. Deduction and Induction
- III. Operational definition and Dictionary definition
- IV. Hypothesis and Proposition
- V. Theory and Model
- VI. Scientific method and scientific Attitude
- VII. Concept and Variable

Q.2 (a) What is measurement? What are the different measurement scales used in research? What are the essential differences among them? Explain in brief with example. **07**

(b) What are the evaluating factors used for secondary data sources? Also explain how each of the five factors influences on evaluation of the secondary sources. **07**

OR

(b) Distinguish between **07**

- I. Statistic and Parameter
- II. Sample frame and Population
- III. Restricted and unrestricted sampling
- IV. Convenience and purposive sampling
- V. Sample precision and Sample accuracy
- VI. Systematic error and Error variance and
- VII. Proportionate and Disproportionate sampling

Q.3 (a) What are the different types of written research report? Narrate the research report components. **07**

(b) Explain in brief the following and their specific application in data presentation **07**

- I. Cross Tabulation,
- II. Pareto diagrams
- III. Box Plots,
- IV. Mapping
- V. Sum and leaf diagram,
- VI. Histogram, and
- VII. Pie charts

OR

Q.3 (a) How hypothesis is tested in research? What is Type 1 and Type II error in hypothesis testing? **07**

(b) Sketch a scatter plot from the following data, determine the equation of the regression line and compute the residuals. **07**

X: 140 119 103 91 65 29 24
Y : 25 29 46 70 88 112 128

Q.4 (a) What is Operation Research? How OR is useful in decision making in business activities? What are different types of models used in OR? Explain in brief. **07**

(b) Use the graphical method to solve the following LP problem **07**

Maximize $Z = 5x_1 + 2x_2$
Subject to $2x_1 + 3x_2 \leq 150$
 $3x_1 \leq 150$
 $5x_2 \leq 200$
And $x_1, x_2 \geq 0$

OR

Q.4 (a) Why Linear Programming is required? What are the assumptions of linear Programming? Narrate in brief the advantage and application of Linear Programming. **07**

Q.4 (b) Apply duality concept for the following minimization problem and solve the LP Problem. **07**

Minimize $G = 40y_1 + 24y_2$
Subject to $20y_1 + 50y_2 \geq 4,800$
 $80y_1 + 50y_2 \geq 7,200$, $y_1, y_2 \geq 0$

Q.5 (a) What is simulation? Explain Monte Carlo Technique of simulation with its advantage as well as disadvantage. **07**

(b) Five men are available to do five different jobs. From past records, the time (in hours) that each man takes to do a job is known and given in the following matrix **07**

Men	Jobs				
	I.	II.	III.	IV.	V.
A	2	9	2	7	1
B	6	8	7	6	1
C	4	6	5	3	1
D	4	2	7	3	1
E	5	3	9	5	1

Find the assignment of jobs that will minimize the time taken to complete the job.

OR

Q.5 (a) Explain the basic concepts of Sensitivity Analysis. What are the different factors affecting the given solutions and how do we resolve them? Give a brief comment on each of them. **07**

(b) A marketing manager has five salesman and five sales districts. Considering the capabilities of the salesman and the nature of districts, the marketing manager estimates that sales per month (in hundred rupees) for each salesman in each district would be as below; **07**

Sales Men	Districts				
	I.	II.	III.	IV.	V.
1	32	38	40	28	40
2	40	24	28	21	36
3	41	27	33	30	37
4	22	38	41	36	36
5	29	33	40	35	39

Find the assignment of salesmen to districts that will result in maximum sales.
