Seat No.:	Enrolment No

## **GUJARAT TECHNOLOGICAL UNIVERSITY**

		M.B.A -II <sup>nd</sup> SEMESTER-EXAMINATION – MAY/JUNE- 2012	
Subje	ect c	ode: 820007 Date: 04/06/2012	<u>)</u>
Subje	ect N	Vame: Research Methodology & Operation Research	
		:30 am – 01:30 pm Total Marks: 70	0
Instr		<u>-</u>	•
		empt all questions.	
		ke suitable assumptions wherever necessary.	
		res to the right indicate full marks.	
٥.	1150	ines to the right indicate run marks.	
Q.1	(a)	What is Business Research? What are the good characteristics of good research?	07
	<b>(b)</b>	Differentiate the following terms and explain their significance in research	07
	(D)	I. Concept and Construct	07
		II. Deduction and Induction	
		III. Operational definition and Dictionary definition	
		IV. Hypothesis and Preposition	
		V. Theory and Model	
		VI. Scientific method and scientific Attitude	
		VII. Concept and Variable	
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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>(b)</b>	What are the evaluating factors used for secondary data sources? Also explain how	07
		each of the five factors influences on evaluation of the secondary sources.	
		OR	
	<b>(b)</b>	Distinguish between	<b>07</b>
		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	07
<b>C</b>	()	components.	
	<b>(b)</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

- **Q.3** (a) How hypothesis is tested in research? What is Type 1 and Type II error in hypothesis testing?
  - (b) Sketch a scatter plot from the following data, determine the equation of the or regression line and compute the residuals.

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.
  - (b) Use the graphical method to solve the following LP problem Maximize  $Z=5x_1+2x_2$

Subject to  $2 x_1 + 3 x_2 \le 150$   $3 x_1 \le 150$   $5 x_2 \le 200$ And  $x_1$ ;  $x_2 \ge 0$ 

OR

- Q.4 (a) Why Linear Programming is required? What are the assumptions of linear O7 Programming? Narrate in brief the advantage and application of Linear Programming.
- **Q.4 (b)** Apply duality concept for the following minimization problem and solve the LP **07** Problem.

 $\begin{aligned} \text{Minimize G= } &40 \ y_1 + 24 \ y_2 \\ \text{Subject to } &20 \ y_1 + 50 y_2 \geq 4,800 \\ &80 \ y_1 + 50 y_2 \geq 7,200 \ , \end{aligned} \qquad y_1,y_2 \geq 0 \end{aligned}$ 

- Q.5 (a) What is simulation? Explain Monte Carlo Technique of simulation with its 07 advantage as well as disadvantage.
  - (b) Five men are available to do five different jobs. From past records, the time (in hours) that each man takes t do a job is known and given in the following matrix

Men	Jobs					
	I.	II.	III.	IV.	V.	
A	2	9	2	7	1	
В	6	8	7	6	1	
С	4	6	5	3	1	
D	4	2	7	3	1	
Е	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.
  - (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	Districts					
Men	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.

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