

417 132
Marketing Research-Theory
Final Examination
02/01/2002
Group A

name: _____

Please indicate whether the statements are true or false. (1 point each)
Elaborate your choice with an explanation (in English). (1 point each)

1. When third-person techniques are used, a respondent will say that his likes and dislikes are the same as his neighbor's. true/false

2. When collecting primary data basic information should be secured first and classified information last. true/false

3. The unique characteristic of the semantic differential scale is the use of a number of bipolar scales to measure a person's attitude toward a product, company, etc. true/false

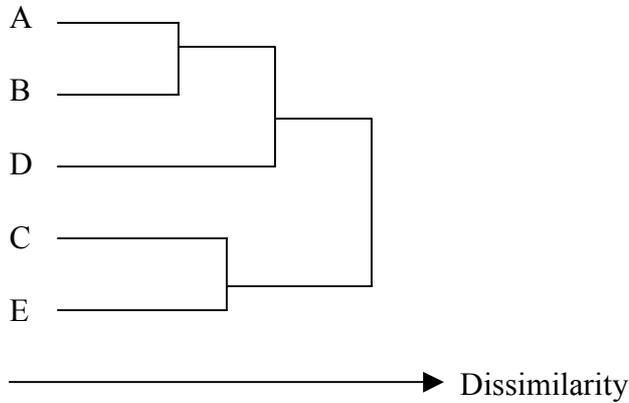
4. Good rapport between an interviewer and a respondent is most likely established by common interests. Demographic characteristics are irrelevant. true/false

- 5.** In cluster sampling, the parent population is broken into mutually exclusive subgroups and a simple random sample is selected from each subgroup. true/false
- 6.** An independent variable which takes a small number (3 or 4) of discrete values is often termed a dummy variable. true/false
- 7.** The ABC Company is involved in trying to segment its market so that it can better design specific marketing programs directed at each segment. One method of segmenting that it might use is cluster analysis. true/false
- 8.** The value of the correlation coefficient, a statistical measurement of association, is sufficient evidence to establish or reject causality between two variables. true/false
- 9.** One function of factor analysis is to identify underlying constructs in the data. true/false

10. Consider the following similarity matrix between brands A, B, C, D, and E.

	A	B	C	D	E
A	--	.75	.15	.25	.16
B	.75	--	.08	.56	.23
C	.15	.08	--	.10	.62
D	.25	.56	.10	--	.27
E	.16	.23	.62	.27	--

The following is an accurate graphical representation of this data. true/false



11. The interpretation of the standard error of an estimate of a regression coefficient parallels that for the standard deviation of a sample mean. true/false

12. One of the applications of conjoint analysis is to the creation of new products with significant consumer appeal relative to competitive alternatives. true/false

13. Simple Euclidean distance is a common measurement of similarity on a perceptual map. true/false

Please solve the following problems (answer in English).

14. (2 + 2 + 2 + 2 points)

Some review on factor analysis:

- a) How is a factor loading interpreted?
- b) What is a communality? What is the implication of low communality for a few of the variables?
- c) How does principal components analysis differ from varimax rotation?
- d) Why are factors rotated?

15. (1 + 2 + 2 + 3 points)

An analyst for an oil company has developed a formal linear regression model to predict the sales of 50 of their filling stations. The estimated model is

$$Y = b_0 + b_1 X_1$$

where

Y = average monthly sales in gallons

X_1 = square foot area of station property

Some empirical results were:

Variable	Mean	Range of Data	Regression Coefficient	t-value
Y		5000-80,000 gal	$b_0 = 10,000$	
X_1	10,000	3000-20,000 sq ft	$b_1 = 3.1$	2

$R^2 = .30$

- What does R^2 mean?
- Interpret the parameter estimates b_1 and b_0 .
- Is the X_1 variable significant? At what level?
- A new station is proposed with 30,000 sq. ft. What would you predict sales to be? What assumption underlie the estimate?

16. (20 points)

A small Caribbean island relied heavily upon tourist income. There was a need to develop a study so that an estimate could be provided each month as to: (20 points)

- The number of tourists.
- The length of stay.
- Their activities.
- Their attitudes toward some programs and activities.

The plan was to conduct a short interview with each respondent and to leave with them a short questionnaire to be completed and mailed after returning home.

Several sampling plans were considered:

- One would be to generate a random sample of hotel rooms and to interview each occupant.
- Another involved sampling every n th person that passed a predetermined point in the city.
- Still another was to sample departing planes and ships. There were about six plane departures and three ship departures per day.

Evaluate all three sampling designs and set up a sampling plan in each case so that each month 500 tourists are obtained in the sample.

Which sample design would you choose? Explain your choice.

17. (16 + 8 + 2 + 4 points)

A study of the readership of a newly launched journal on domestic animals involved three variables:

Readership: 1 Respondent has read at least one issue of the journal.
 0 Respondent has not read any issue of the journal.

Gender: 1 Female
 0 Male

Pet owner: 1 Respondent lives in an household with pets.
 0 Respondent lives in an household without pets.

- a) Analyze and interpret (by means of percentages) the data using two- and three-variable cross-tabulations. Display the data for the three-variable cross-tabulation graphically.

Readership	1				0			
Gender	1		0		1		0	
Pet Owner	1	0	1	0	1	0	1	0
	13	6	4	2	1	26	4	44

- b) Perform a test for independence between gender and readership. What exactly is the null hypothesis? Is the test statistic significant? At what level?
- c) This data set proves that readership differs by gender. True or false? Why?
- d) You are asked to predict whether a respondent chosen at random reads or does not read this new journal. Initially you have no knowledge on his or her gender or pet ownership. By how much can you reduce the prediction error if you know his or her sex?

18. (2 + 2 + 4 points)

A supermarket chain is investigating the desirability of adding a new product to the shelves of its associated stores. Since many products must compete for limited shelf space, the store has determined that it must sell 100 units per week in each store in order for the item to be sufficiently profitable to warrant handling it. Suppose that the research department decides to investigate the item's turnover by putting it in a random sample of ten stores for a limited period of time. Suppose further that the average sales per stores per week were as follows:

Store i	Sales X_i	Store i	Sales X_i
1	86	6	93
2	97	7	132
3	114	8	116
4	108	9	105
5	123	10	120

Does this information indicate that this new product can reach the required sales level?

- State the null and alternate hypotheses.
- Which test should be used? Be specific.
- Would you reject the null hypotheses at the 1 percent level of significance? Support your conclusion with the necessary calculations.

