

**CMR Institute of Technology
Department of Management Studies**

Answer key

III Internal test – II semester MBA (2016-18 Batch)

Subject: Research Methods

Sub Code: 16MBA23

Date: 29.05.2017

Time: 9:00-10:30

Duration: 90 mins

Part A - Answer Any Two Full Questions (16*02=32 Marks)

1. a) What is meant by cross tabulation? Give an example

Cross tabulation is a process of collecting raw data and displacing them on compact statistical tables for further analysis; it is a tool that allows you to compare the relationship b/w the two variables. Cross tabulation is a process of comparing one variable with various characteristics and attributes in a particular or systematic format.

b) Types of reports

1. Technical report / Thesis

This is comprehensive full report of the research process and its outcome. Primarily meant for academic community. It follows a specific pattern, Couched with technical language.

2. Popular report

Designed for an audience of executives/ administrators and non technical users, reader is less concerned about the methodological details, but interested in studying the major findings and conclusions and applying the findings to decisions.

3. Interim report

This is a short report, contains either first result or final outcome. It helps to keep alive the agency's interest in the study. To avoid time lag between data collection and presentation of the report – interim report can be submitted.

4. Summary report

Prepared for the consumption of the lay audience, the general public, findings are of general interest. It is written in non technical simple language, 2-3 pages. This is suitable for publication in daily newspaper.

5. Research abstract

Short summary of technical report, by doctoral students.

Brief presentation of thesis, to decide the area of specialisation and interest.

6. Research article

Is designed for publication in a professional journal

c) Explain the four basic types of scales with examples?

Data types

1) **Nominal Scales (Data):** classifies /partitions a set into categories that are mutually exclusive and collectively exhaustive. Each category is given a name or assigned a number and the numbers are just symbols used for labelling a group.

E.g.: Political supporters in USA can be classified into Democrats or Republicans. These two groups are exclusive, at the same time they are also exhaustive i.e. every member of the population will be covered in these groups.

2) **Ordinal scales (Data):** This scale ranks objects or individuals along the continuum of the attribute being scaled from one largest to smallest or first to last and so on.

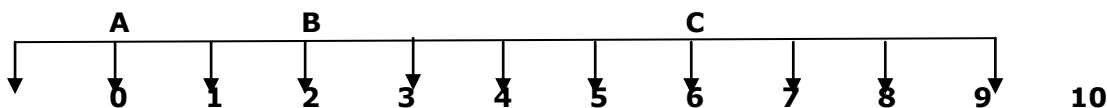
E.g.: If a respondent is asked to rank three books on the content matter. He may give the following ranks.

Item	Rank
Book A	II
Book B	III
Book C	I

This implies that Book A is better than Book B and Book C is better than Book A therefore, it can be concluded that Book C is better than Book B also. However it does not imply the distance b/w rank I, II & III, in other words it does not show the extent to which each is better than the other. Thus it has order but no distance.

- 3) **Interval Scale (Data):** it has the characteristics of nominal and ordinal data, in addition it has the property of equality of interval i.e. the distance b/w I and II is the same as the distance b/w II and III.

e.g.: if we are measuring the performance of three students A, B and C on an interval scale, and we get the score 1, 3, 7 then it can be graphically depicted as follows:



Comparing the performance of these students on these intervals it can be said that the difference in the performance of Band C is twice the difference in the performance of A and B.

- 4) **Ratio scales (Data):** is characterized by the presence of order, distance and unique origin. It measures the absolute amount of variable. Height, weight, area, is examples ratio scale, it has an absolute zero and a person weighing 80 kg is twice as heavy as a person weighing 40 kg.

E.g. weighing machine is a good example of ratio scales.

2. a) Short note on Annova

ANNOVA stands for 'Analysis of Variance'. It is a technique of studying the cause and effect of one or more factor on a single variable. The underlying principle of Annova is to compae the differnces in the different means of populatin by studying the amount of variations within the samples, with respect to the amount of the variation present b/w samples of the population.

b) Name any explain briefly the two types of errors in testing of hypothesis?

Two types of error in testing hypothesis

- Type I error
- Type II error

The acceptance or rejection of a hypothesis is based upon sample resulted and there is always possibility of sample not being representative of the population. This could result in errors.

There are two types of errors occur in the hypothesis testing:-

1. Type I errors
2. Type II errors

	Accept H0	Reject H0
H0 true	correct decision	type I error
H0 false	Type II errors	correct decision

If we reject a hypothesis when it should be accepted then the error is known as type I error. The probability of type I error is the level of significance 'ALPHA'.

$ALPHA = P[\text{type I error}] = p[\text{reject } H_0 / H_0 \text{ is true}]$

If we accept the wrong hypothesis then it is type II error:-

$p[\text{type II error}] = p[\text{Accept } H_0 / H_0 \text{ false}] = \text{Beta}$

Known as the power of test.

c) Discuss the questionnaire construction procedure and also state the importance of questionnaire?

The process is not a matter of simply listing questions that comes to researchers mind. It is a rational process involving much time, effort and thought. It consists of the following steps:

a. Data need determination

The data required for a specific study can be determined by deep analysis of the research objectives, the investigative questions relating to each of the research objectives, hypothesis and the operational definitions of the concepts used in them.

b. Preparation of dummy tables

With adequate coverage of the information required for the study and also with securing the information in the most usable form, the best way to ensure these requirements is to develop "dummy tables in which to display the data to be gathered.

c. Determination of the respondent's level

d. Answers those questions such as who are our respondents? Are they person with specialized knowledge relating to the problem under study? Or they lay people? What is their level of understanding and knowledge

e. Data gathering method decision

We must choose the method of collection of data to be used, which communication mode is appropriate, e.g. face-to-face interview or mailing.

f. Instrument drafting

First a broad outline of the instrument may be drafted,

Second the sequence of these grouping must be decided.

Third, the question to be asked under each group heading must be listed. All conceivable items relevant to the data need should be compiled.

g. Evaluation of the draft instrument

This evaluation may be done in terms of the following criteria:

The relevance of each question to research objectives and investigative questions.

The appropriateness of the type of question: open ended or structured

The clarity and unambiguity of the question.

The practicability of the question

The validity of question.

h. Pre testing

The revised draft must be pre-tested in order to identify the weakness of the instrument and to make the required further revisions to rectify them.

Specification of procedures/ instructions

i. The procedures or instructions relating to its use must be specified. Specification is one way to ensure that different interviews will deal with specific questions in a standardized manner.

j. Designing the format

The format should be suited to the needs of the research. The instrument should be divided into different sections relating to the different aspects of the problem.

Once the information needed is determined, we construct questionnaire which involves four major decision areas, they are

k. Question relevance and content

Should be relevant to meet the research objective

Should yield significant information for answering an investigative question.

Consider its coverage
 Is it of proper scope
 Question to provide the information needed to interpret the response fully
 Whether respondents know the answer to the questions.
 Question wording

l. Shared vocabulary

The exact understanding b/w the investigator and the respondent calls for the use of vocabulary common to both parties.

Exactness

The words should be exact or precise, reflecting what the question content is intended to mean.

m. Simplicity

Words should be simple, should be simpler equivalents used or clarified in detail.

Neutrality

Words that cause undue influence of prestige or bias can result in inaccurate answers. The words must be neutral ones, free from the influence of fear, prestige, bias or emotion.

n. Response form or types of questions

Open ended questions – these are unstructured ones, providing free scope to the respondents to reply with their own choice of words and ideas.

Closed ended questions – these are structured ones with two or more alternative responses from which respondents can choose. They contain standardized answers and they are simple to administer and easy to complete and analyse.

o. Question order or sequence

Overall sequence: ease the respondent’s task in answering and can either create or avoid bias due to context effects. Intra sequence – which includes funnel sequence and inverted funnel sequence.

3. a) Distinguish b/w oral and written report?

Oral Report	written report
<ul style="list-style-type: none"> This type of report is presented orally to the target audience. it does not have a format. It may not contain all the information It is short. 	<ul style="list-style-type: none"> It is written and submitted by the researcher in form of a document. Format needs to be followed. Consists of technical language It is detail.

b) Briefly explain likert scales and semantic differential scales with an example each?

1. LIKERT SCALE: A measurements scale with 5 response category ranging from “strong disagrees to indicate a agree” which requires the respondents to indicate a degree of agreement (or) disagreement with each of the series of statements related to the objects.

statements	Strongly Agree (5)	Agree (4)	Undecided (3)	Disagree (2)	Strongly disagree (1)
A person’s standard of living is judged only against income earned by him.					

Standard of living of the person can be increased by borrowing money					
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2. SEMANTIC DIFFERENTIAL: A seven points rating scale with end points associated with by polar labels that have semantic meaning.

Pls mark (X) the blank that best indicates how accurately one of the other adjective describes what the store means to you. Pls be sure to mark every scale: do not omit any scale.

More Super Store is

- Powerful ---:---:---:---:-X-:---:---: Weak
- Unreliable ---:---:---:---:---:-X-:---: Reliable
- Modern ---:---:---:---:---:---:-X-: Old Fashioned
- Cold ---:---:---:---:---:-X-: Warm
- Careful ---:-X-:---:---:---:---:---: careless

c) Explain the steps involved in processing the data?

The various steps in processing of data may be stated as:

- Identifying the data structures
- Editing the data
- Coding and classifying
- Transcriptions of data
- Tabulation of data

Preparation for analysis

Major criterion in this is to define the data structure. A data structure is a collection of related variables and can be conveniently represented as a graph whose nodes are labeled by variables. The data structures also define and states the preliminary relationship b/w variables group of variables that have been preplanned by the researcher.

A simple structure could be linear structure, in which one variable leads to the other and finally to the resultant end variable.

Editing: Editing is a process of checking to detect and correct errors and omissions.

Data editing happens at two stages

1. at the time of recording the data – considers the following questions in mind
 - have variable descriptions been specified
 - Have labels for variable names and value labels been defined and written?
2. Second at the time of analysis of data.

It is a requisite before the analysis of the data is carried out. This ensures that the data is complete in all respect for subjecting them to further analysis.

 - Is the coding frame complete
 - Is the number of cases correct
 - Are there differences b/w questionnaire, coding frame and data?

The editing step checks for the completeness, accuracy and uniformity of the data set created by the researcher.

Completeness: First step of editing is to check whether there is an answer to all the questions, variables set out in the data set.

E.g.: family income can be inferred from occupation of family members, sources of income, spending, saving and borrowing habits of family members.

Accuracy: a random check process can be applied to trace the errors at this step. Consistency in response can be checked in this step. Cross verification to a few related responses would help in checking for consistency in responses. The reliability of data set would heavily depend on this step of error correction.

Uniformity: should; look of uniformity in interpretation of questions and interpretation of questions and instructions by the data recorders. E.g. the responses towards specific feelings could have been queried from a positive as well as a negative angle.

Finally editing of data sets is to maintain a log of all corrections that have been carried out at this stage.

Coding and classifications

Coding: Is a Process to assign numerals or other symbols to the several responses of the data set.

The recording of the data is done on the basis of this coding scheme.

Numeric coding: coding need not necessarily be numeric. It can also be alphabetic. Coding has to be compulsorily numeric, when the variable is to be subject to further parametric analysis.

Alphabetic coding: a mere tabulation or frequency count or graphical representation of the variable may be given an alphabetic coding.

Zero coding: in many instances when manual analysis is done, a code of 0 would imply a "no response".

	Variable /observation	Response category	code
	Organization	Private Public government	Pt Pb Go
	Vehicle performance	Excellent Good Adequate Bad worst	5 4 3 2 1

Classification

When open ended questions are received, classification is necessary to code the response. A classification method should meet certain requirements or should be guided by certain rules. First, classification should be linked to the theory and the aim of the particular study. This objective will determine the dimension chosen for coding.

Second, classification should be exhaustive. There must be a category for every response.

E.g.: classification of marital status into 3 categories married, single, divorced is not exhaustive, because responses like widower, separated cannot be fitted into the scheme here an open ended question will be the best mode of getting the response.

Transcription of data

The transcription process helps in presentation; of all responses an observations on data sheets, which can help the researcher to arrive at preliminary conclusion as to the nature of the sample collected etc.

It is an intermediary process b/w data coding and data tabulation.

Types of transcription

- Manual transcription
- Long worksheets

Computerized data processing

When the sample size is large or when the variables studied is vast and interrelated, data can be transcribed to the computer for further processing.

Use natural coding schemes

Avoid use of blank spaces as a coding category

Do not use "+" or "-" symbols.

Tabulation

Tabulation is a process of summarizing raw data and displaying them on compact statistical tables for further analysis.

It involves counting the number of cases falling into each categories identified by the researcher.

Tabulation can be done manually or through the computer. It depends on the size, type of study, cost considerations time pressures and availability of software packages.

Manual tabulation – counting

Age group	Tally marks	No of responses
Below 30	11	2
20-39	1111	5

Computerized tabulation – with software packages – SPSS (Statistical Package for Social Sciences)

Frequency distribution and class intervals

Variables that are classified according to magnitude or size are often arranged in the form of a frequency table.

In constructing a tale it is necessary to determine the number of class intervals to be used and the size of the class intervals.

Two types of variables

Continuous variables – has unlimited number of possible values b/w the lowest and highest with no gaps or breaks e.g. age, weight, temperature.

Discrete Variables – can have series of specified values with no possibility of values b/w these points. Each value of a discrete variable is distinct and separate.

E.g. Gender of persons (male/female), occupation (salaried, business, professional), car size (800cc, 1000cc, 1200cc).

Class intervals – the number of class intervals may not be less than 5 or more than 15.

Class intervals must be clearly designated in a frequency table in such a way as to obviate any possibility of misinterpretation or confusion.

Part -D answer any two (01*08= 08 marks)

Describe the components of a written research report.

Research report format

Report outline

A. Prefactory items:

1. Title page
2. Researcher's declaration
3. The certificate of the research supervisor
4. Preface / acknowledgements
5. Table of contents
6. List of tables
7. List of charts and graphs
8. Abstract or synopsis

B. Body of the report

1. Introduction

- a) Theoretical background of the topic
- b) Statement of the problem
- c) Review of literature
- d) The scope of the present study
- e) The objectives of the study
- f) Hypothesis to be tested
- g) Definitions of the concepts
- h) Model, if any

2. The design of the study

- a) Methodology
 - I. Overall typology
 - II. Methods of data collection
- b) Sources of data
- c) Sampling plan
- d) Data collection instruments
- e) Field work
- f) Data processing and analysis plan
- g) An overview of the report
- h) Limitations of the study

3. Results: findings and discussions

4. Summary, conclusion and recommendations

C. Terminal items

1. Bibliography

2. Appendix

- a) Copies of data collection instruments
- b) Technical details on sampling plan
- c) Complex tables
- d) Glossary of new terms used in the report