INDIAN SCHOOL AL WADI AL KABIR

Class: XI	Department: Commerce
Work Sheet: 2 Statistics	**Topic: Collection of Data**

1. Define the following terms:

   a**. Enumerator**: he is the person whose help is needed by the investigator in collecting the information.

   b. **Respondent**: the person who respondents to the questions asked by the investigator.

   c. **Telephone interview**: interview taken on phone, as a source of data.

   d. **Sampling error**: the difference between the actual value of population and its estimate.

2. Name the quarterly journal published by NSSO.   -   Sarvekshana

3. Explain the essential three features of a good questionnaire. (Refer notes)

4. Discuss the various sources of secondary data. (Refer notes)

5. What are the sources of collection of secondary data? Name any 6 such sources. (Refer Notes)

6. What precautions are necessary while using secondary data? (Refer notes)

7. Sampling is a necessity under certain conditions. Explain.

   Sample method is the only method that can be used under certain conditions. There are some cases in which the census method is inapplicable and the only practical method is sampling method. For example, if one is interested in testing the breaking strength of chalks manufactured in a factory, under census method all the chalks would be broken in the process of testing. Also, if the population under testing is infinite, sample method is the only solution. Sample method is also necessary when the results are required within a short time; resources required for survey are limited and when the area of survey is wide.

8. Which of the following methods give better results and why? Census or Sample.

   Choice between the two methods depends upon the objectives of the survey. Usually sample surveys are preferred as they provide reliable and accurate information at a lower cost and short time span.

9. Outline the essentials of a good sample.
   A sample must have the following qualities in order to arrive at unbiased and right conclusions:

   a. Representative: All characteristic of the universe must be represented in the sample. It is possible only when each unit of the universe stands equal chance of being selected in the sample.
   b. Independence: All units of sample must be independent of each other. i. e. one item of the universe should not be dependent upon another item of the universe.
   c. Homogeneity: All selected samples should be homogenous to each other.
   d. Adequacy: The number of items selected as samples should be fairly adequate so that some reliable conclusions are drawn for the universe as a whole.

10. Match the following:

Column -I	Column - II
i. Primary Data	a. Data already collected by other individuals/organisations.
ii. Mailing Surveys	b. Free from the personal bias of the investigator.
iii. Secondary Data	c. A person who actually collects the desired statistical information.
iv. Indirect Oral Investigation Method	d. Questionnaires are mailed to respondents.
v. Enumerator	e. Collection of data from its source of origin.

(i)–(e), (ii)–(d), (iii)–(a), (iv)–(b), (v)–(c)

1. Which of the following is a merit of a good questionnaire?
   a. Difficulty
   b. Less number of questions
   c. Not in proper order
   d. Invalid questions

Ans: b

2. Which of the following methods is used when an investigator collects the required Information with the informant?
   a. Direct Personal Investigation
   b. Indirect oral investigation
   c. Mailing method
   d. Enumerator's method
   Ans: a

3. Which of the following is a source of secondary data?
   a. Government publication
   b. Private publication
   c. Report published by the State Bank of India
   d. All of these
   Ans: a

4. Data collected for the first time from the source of origin is called:
   a. Primary data
   b. Secondary data
   c. Internal data
   d. None of these
   Ans: a

5. Sampling errors are present only in:
   a. Census survey
   b. Sample survey
   c. Both census and sample surveys
   d. Neither census nor sample survey
   Ans: b

6. Which type of data is contained in Census of India?
   a. National income
   b. Industry
   c. Population
   d. Agriculture
   Ans: c

7. The survey which helps in pre-testing the questionnaire is:
   a. Pilot survey
   b. Census survey
   c. Sample survey
   d. None of these
   Ans: a

8. State whether the following statement are true or false.

(i) There are many sources of data. (True/False)
    False
    There are mainly two sources of data: Primary and Secondary.
(ii) Telephone survey is the most suitable method of collecting data, when the population is literate and spread over a large area. (True/False)
    False
    Mailing questionnaires would be more suitable as the population is literate
    Telephonic survey is most suitable in case of illiterate population spread over a large area.
(iii) Data collected by investigator is called the secondary data. (True/False)
    False
    Investigator may collect the data by conducting an enquiry or an investigation. Such data are called primary data, as they are based on first-hand information.
(iv) There is a certain bias involved in the non-random selection of samples. (True/False)
    True
    In a non-random sampling method all the units of the population do not have an equal chance of being selected and convenience or judgement of the investigator may create a bias.
(v) Non-sampling errors can be minimised by taking large samples. (True/False)
    False
    It is difficult to minimise non-sampling error even by taking a large sample as they include Errors in Data Acquisition, Non-Response Errors and Sampling bias.

9. Give two examples each of sample, population and variable.

   Example 1: A study was conducted to know the average weight of students of class seventh in Delhi. The total number of students in class seventh was 2860. Out of these 200 students were randomly selected and their weight was recorded. In this example:
   a. Population is, the no of students of class seventh in Delhi, the total number of which is equal to 2860.
   b. Sample is, the 200 students selected whose weight was recorded.
   c. Variable under study, is the weight of the students.
   Example 2: A person suffering from weakness and fatigue was advised by the doctor to have his blood test done for detection of anaemia. The pathologist took 2 ml of his blood for the test and tested the haemoglobin level in the blood. In this example:
   a. Population is the total amount of blood in the person's body.
   b. Sample is, the 2 ml blood tested.
   c. Variable under study, is the haemoglobin in the blood sample.

10. Which of the following methods give better results and why?
    (a) Census or (b) Sample
    In terms of accuracy of results, census is better as it studies all the units of population

but this method is very time consuming, expensive and sometimes not feasible to use. Hence, sampling is better due to following reasons

a. Economical Sampling involves study, of a fraction of population and hence the cost involved In sampling is relatively low.
b. Time Saving Huge amount of time is required to conduct a census survey while sample studies do not take that much time.
c. Lesser Effort As only a part of the population is studied, it entails lesser effort on the part of the investigator than that required in census.
d. Considerable Accuracy Results from sampling may not be as accurate as in case of sampling but the level of accuracy of these results can be established through statistics tests of significance and hence can be applied in general to the whole population if found significant.

11. Which of the following errors is more serious and why?

   (a) Sampling error
   (b) Non-sampling error
   Sampling error refers to the difference between the sample estimate and the actual value of a population characteristic. This type of error occurs when one makes an observation from the sample taken from the population. It is possible to reduce the magnitude of sampling error by taking a larger sample.
   Non-sampling errors are more serious than sampling errors because a sampling error can be minimised by taking a larger sample but it is difficult to minimise non-sampling error, even by taking a large sample. Even a Census can contain non-sampling errors. These include errors in data acquisition, non-response errors and sampling bias.

12. Does the lottery method always give you a random sample? Explain.

   Lottery method always gives a random sample if it is used in the proper manner without any bias. If the slips are prepared properly and drawn out one by one so that all the slips have equal chance of being selected in the sample, it will definitely give a random sample. But, if the slips are not made of identical size and identification is possible of the names or numbers on the slips, the selection will become biased.
   Similarly, if the same name or number is written on more than one slip and if some name or number is missed then also the chances of selection of different units of population in the sample will not be equal. In such cases even lottery method will not give random sample.

13. Do samples provide better results than surveys? Give reasons for your answer.

   A survey, which includes every element of the population, is known as Census or the Method of Complete Enumeration. On the other hand, when a part of the population is studied and predictions are made about the population based on this part, it is called sampling. In terms of accuracy of results, census is better as it studies all the units of population but this method is very time consuming, expensive and sometimes not feasible to use. Hence, sampling is better due to following reasons:

- Economical Sampling involves study of a fraction of population and hence the cost involved in sampling is relatively low. Census costs are high especially in case of large population with wide coverage in terms of area.
- Time Saving Huge amount of time is required to conduct a census survey if the population size is large or spread over a wide area while sample studies do not take that much time to be conducted.
- Lesser Effort As only a part of the population is studied, it entails lesser effort on the part of the investigator than that required in census.
- Inappropriateness of Census In certain case, when the population is infinite or exhaustible, census cannot be done and hence sampling is the only choice, e.g., one cannot burn all the units of coal available to know their calorific value; sample is the only means of testing it.
- Considerable Accuracy Results from sampling may not be as accurate as in case of sampling but the level of accuracy of these results can be established through statistical tests of significance and hence can be applied in general to the whole population if found significant.