Module 2

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| S.No | Questions | Books and references/Link |
| 1 | What is Data? Explain primary data & secondary data. List advantages and disadvantages of primary & secondary data. | Statistical Method S.C> Kapoor, Unit 3 and 4  Some net references for mentioned topics in the book |
| 2 | Explain Primary Data Collection Methods from the perspective of Quantitative and Quantitative approach. |
| 3 | Explain following Quantitative methods of data collection  Time series, Smoothing, Barometer, Econometric Methods |
| 4 | Qualitative Methods: Survey, Polls, Interview, Delphi technique, Focus group, Questionnaire |
| 5 | Methods of Collecting Secondary Sources of Data  Published Printed Sources, Books, Journals/Periodicals, Magazines/Newspapers  Published Electronic Sources, E-journals, General Websites, Weblogs, Diaries, Letters  Government Records, Public Sector Records |
| 6 | When sampling is preferred? What are characteristics/advantages of sampling? |
| 7 | Explain Probability Sampling types in detail with examples, advantages and disadvantages   1. Simple Random Sampling 2. Systematic Sampling 3. Stratified Random Sample 4. Cluster Sampling 5. Multistage Sampling |
| 8 | Explain Non-Probability Sampling types in detail with examples, advantages and disadvantages   1. Convenience Sampling 2. Purposive/Judgement/Deliberate/Authoritative Sampling 3. Quota Sampling 4. Snowball Sampling |
| 9 | Differentiate between  probability and non-probability sampling  Stratified Random Sample & Cluster Sampling  Stratified Random Sample & Quota Sampling |
| 10 | Perform Stratified Sampling |
| 11 | Perform Stratified Sampling |
| 12 | Perform Stratified Sampling |  |
| 13 | Perform Stratified Sampling |  |
| 14 | Perform Stratified Sampling  How many students from each year get selected? |  |
| 15 | Draw Pie Chart |  |
| 16 | Draw Pie Chart |  |
| 17 | Answers from Two Way Table |  |
| 18 |  |  |
| 19 | Data Collection Methods: Definition, Examples, and Sources | <https://drive.google.com/file/d/14jVvMRKlRjwfuNBIfuoqLKnFqBVJtA16/view?usp=sharing> |
| 20 | Primary and Secondary Data | <https://drive.google.com/file/d/14jVvMRKlRjwfuNBIfuoqLKnFqBVJtA16/view?usp=sharing> |
| 21 | Primary and Secondary Data Collection Methods | <https://drive.google.com/file/d/14jVvMRKlRjwfuNBIfuoqLKnFqBVJtA16/view?usp=sharing> |
| 22 | Sampling and Methods of Sampling | <https://drive.google.com/file/d/1eQaHQs9zfx7rQQqu04YB2na2fQQzxGG-/view?usp=sharing> |
| 23 | Simple random sampling with and without replacement | <https://drive.google.com/file/d/1vVX15ua6DVIkxom5zKOakOeDm6qrHcBN/view?usp=sharing> |
| 24 | Consider a finite population of N =4 and the values of sampling units as ( 1,2,3,4) . Enumerate all possible values of samples with sampling size 2 using SRSWR. | Agarwal S C Gupta |
| 25 | A population of five units has the observations : 7,6,8,4,10  Random samples of three units are drawn such that no unit is repeated in a sample and the order of selection does not matter.   1. Show that the sample mean of is an unbiased estimator of population mean 2. Show that s2 is an unbiased estimator of S2. |  |
| 26 | For the following population , consider all possible SRSWOR samples of size 3.   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | i | 1 | 2 | 3 | 4 | 5 | | Yi | 5 | 8 | 3 | 11 | 9 |   Show that the sample mean of is an unbiased estimator of population mean  Show that s2 is an unbiased estimator of S2. |  |
| 27 | Discuss Non-Probability Sampling types in detail with examples, advantages and disadvantages. |  |
| 28 | What is primary and secondary data? Explain with example | Statistical method by S.P. Gupta  Collection of data 3.2 |
| 29 | What are sources of primary and secondary data? | Statistical method by S.P. Gupta  Diagrammatic and Graphic presentation 3.3 |
| 30 | Explain different methods of data collection. | Statistical method by S.P. Gupta  Diagrammatic and Graphic presentation 3.3 |
| 31 | What is sampling? What are advantages and disadvantages of it? | Statistical method by S.P. Gupta  Sampling and Sample Designs 4.2 |
| 32 | Explain probability sampling and its types. | Statistical method by S.P. Gupta  Sampling and Sample Designs 4.7 |
| 33 | Explain non-probability sampling and its types. | Statistical method by S.P. Gupta  Sampling and Sample Designs 4.5 |
| 34 | Differentiate between probability and non-probability sampling. | Statistical method by S.P. Gupta  Sampling and Sample Designs 4.7 |
| 35 | Explain following types of probability sampling with examples  1) Simple Random Sampling 2) Stratified random Sampling | Statistical method by S.P. Gupta  Sampling and Sample Designs 4.7 |
| 36 | Explain merits and demerits of sampling | Statistical method by S.P. Gupta  Sampling and Sample Designs 4.17 |
| 37 | Explain following Qualitative data collection Methods: Survey, Polls, Interview, Focus group, Questionnaire | Statistical method by S.P. Gupta  Collection of data 3.3 |
| 38 | Draw all possible samples of size 2 without replacement from the population {50, 60, 64, and 70}. Calculate  E( x̅), V( x̅) and Verify that E( x̅) = μ | “B. L. Agarwal”, Basic Statistics,  Page no 186 |
| 39 | A teacher wanted to take a sample of 30 students from above data, stratified by age and gender. How many girls from year 7, 8 and 9 would be surveyed?  Year Boys Girls  7 80 50  8 60 60  9 70 40 |  |
| 40 | Students from 3 schools attend a conference. The organisers want to carry out a survey. They want to take stratified sample of 50 students. How many students from school 2, we include? |  |
| 41 | From population of 5 numbers, 3, 6, 9, 12, 15, draw all possible random samples of size 2 without replacement. Obtain the sampling distribution of sample mean and from it calculate expectation of sample mean. | “B. L. Agarwal”, Basic  Statistics, Page no 186 |
| 42 | Differentiate between purposive sampling and random sampling | “B. L. Agarwal”, Basic Statistics,  Page no 185 |
| 43 | Distinguish between sampling with replacement and sampling without replacement. Also give formulae for standard deviation of mean in two cases | “B. L. Agarwal”, Basic Statistics,  Page no 161 |
| 44 | What are the preliminaries to data collection?  What are the requisites of statistical unit  Types of statistical units and types of enquiry  What are the methods of collection of primary data?  What are the sources of secondary data and what are its precautions? | Business statistics topics on Collection of Data  Chapter 2.  ebook |
| 45 | What are the types of sampling? Explain each type with suitable examples | Lecture notes of IITK |
| 46 | Techniques which come under Probabilistic and Non Probabilistic Sampling |  |
| 47 | Numerical on sampling | Agarwal |
| 48 | Numerical on SRSWR, SRSWOR, Quota sampling | Agarwal |
| 49 | Numericals on variance of sample mean based on SRSWR, SRSWOR | S.P.Gupta |
| 50 | Numericals on stratified sampled | S.P Gupta |
| 51 | Numericals to prove the sample means and sample variance | Agarwal |