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ALLAMA IQBAL OPEN UNIVERSITY, ISLAMABAD

(Department of Agricultural Sciences)

Course: Research Methods (2504) • Level: M.Sc Forestry Extension

Semester: Autumn 2026

Assignment No. 1

Total Marks: 100 • Pass Marks: 40 • Note. All questions carry equal marks (20 each).

SOLVED ASSIGNMENT GUIDE — For Study & Reference

Note: This guide is prepared for study and reference purposes only. Students are advised to read the relevant units of the course book, understand the concepts, and then write the assignment in their own words. Do not copy this guide word for word.

Question 1: Random Sampling — Definition, Modes, and Three Modes in Detail (20 Marks)

Q.1 Define random sampling. Enlist the most popular modes of random sampling. Discuss any three of them in detail. (20)

Introduction

Almost no research study can examine every member of the population it is interested in. A forestry extension researcher who wants to know how farmers in a district use communal grazing land, or what proportion of households collect fuelwood from a particular forest, cannot interview every household; time, money and staff make a complete census impractical,

and sometimes even undesirable. The researcher therefore studies a part of the population — a sample — and uses the findings from that part to draw conclusions about the whole. Everything then depends on how that part is chosen. If the sample is chosen carelessly, it may systematically over-represent some kinds of people and under-represent others, and no amount of later statistical skill can repair the damage. Random, or probability, sampling is the family of methods designed to choose a sample fairly, so that the sample can stand for the population and the researcher can state, with a measurable margin of error, how far the results may be trusted. This answer defines random sampling, lists its most popular modes, and then discusses three of them — simple random sampling, stratified random sampling and cluster sampling — in detail, with examples from social and forestry extension research.

Definition of Random Sampling

Random sampling, also called probability sampling, is a method of selecting a sample in which every unit (person, household, village, plot or other element) of the population has a known and non-zero chance (probability) of being selected, and the selection is made by a chance procedure — drawing lots, using random number tables or a computer random-number generator — and not by the personal choice, convenience or judgement of the researcher. Three features of this definition deserve emphasis. First, the chances are known: in a simple random sample of 100 households from a list of 2,000, every household has exactly a 100 in 2,000 (one in twenty) chance. Second, no unit is excluded in advance: a zero chance for some part of the population — for example, households not on an incomplete list — already breaks the method. Third, the actual selection is mechanical and impersonal; chance, not the

investigator, decides. Because selection probabilities are known, the laws of probability allow the researcher to calculate sampling error, construct confidence intervals and test hypotheses — in short, to generalise from the sample to the population on a scientific basis. This is the decisive advantage of random sampling over every other way of choosing respondents, and it is why survey findings reported in research are normally based on probability samples.

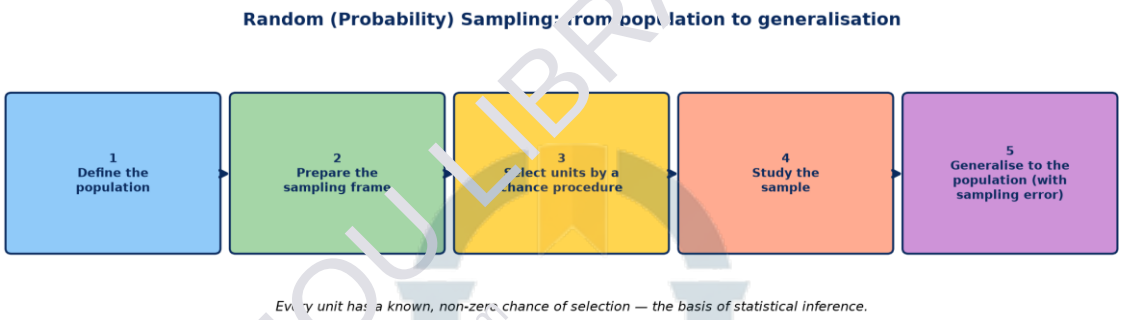

Figure 1: The logic of random sampling — a fairly drawn sample, studied carefully, supports conclusions about the whole population within a calculable margin of error.

The Most Popular Modes of Random Sampling — Enlisted

- Simple random sampling — every unit, and every possible combination of units, has an equal chance; units are drawn blindly from a complete list (the sampling frame) by lottery or random numbers.
- Systematic random sampling — after a random start, every kth unit is taken from the list, where k is the sampling interval (population size divided by sample size).
- Stratified random sampling — the population is first divided into homogeneous subgroups (strata) such as sex, landholding size, village or income group, and a random sample is drawn from every stratum.

- Cluster sampling — the population is divided into groups (clusters) such as villages, schools or forest blocks; some clusters are selected randomly and units are studied within the chosen clusters.
- Multi-stage sampling — sampling proceeds in stages, for example districts, then villages within districts, then households within villages, with random selection at each stage; large national surveys normally use this design.
- Probability proportionate to size (PPS) sampling — a refinement often combined with cluster or multi-stage sampling, in which larger clusters are given a proportionally larger chance of selection so that the overall sample remains self-weighting.

Mode 1: Simple Random Sampling in Detail

Simple random sampling is the basic and purest form of probability sampling, and all other modes are best understood as modifications of it. Its essential requirement is a sampling frame: a complete, up-to-date list of all units of the population, each identified by a number or name. The researcher decides the sample size, and then selects that many units from the frame by a strictly chance device. Traditionally this was done by the lottery method — writing each name on a slip, mixing the slips thoroughly and drawing blindly — or by tossing coins or drawing cards. Modern practice uses tables of random numbers or computer-generated random numbers: each unit is given a serial number, and units whose numbers appear in the random sequence are taken until the required size is reached. Sampling may be with replacement (a drawn unit is returned to the population and may be drawn again) or, more commonly in social research, without replacement (each unit can enter the sample only once).

The strengths of simple random sampling are its simplicity, its complete freedom from the researcher's bias, and the fact that its statistical properties are fully understood, so that sampling error can be computed by straightforward formulas. Its limitations are equally clear. It requires a complete frame, which often does not exist — there is rarely a list of all fuelwood collectors, graziers or informal forest users in a region. It can also be expensive when the population is spread over a wide area, because the randomly chosen respondents may be scattered across dozens of distant villages, multiplying travel. Finally, pure chance can, in a small sample, produce an unrepresentative result — for example, very few women or very few landless households — not through bias but through accident. Where a good list exists and the population is reasonably concentrated, however, as in selecting 120 students from a college enrolment list or 60 plots from a forest compartment register, simple random sampling remains the cleanest design available.

Mode 2: Stratified Random Sampling in Detail

In stratified random sampling the researcher first divides the population into strata — subgroups that are internally similar with respect to some characteristic related to the study — and then draws an independent random sample from each stratum, combining them into the total sample. Typical stratifying variables are sex, age group, landholding size, occupation, village, ecological zone or income level. Stratification may be proportionate, in which each stratum contributes to the sample in the same proportion as it bears to the population, or disproportionate, in which a small but important stratum is deliberately over-sampled so that it can be analysed separately, with the results weighted back at the analysis stage. The procedure

is: identify the characteristic, obtain or construct the frame for each stratum, decide the allocation, and draw a simple random (or systematic) sample within every stratum.

Stratified sampling is popular because it guarantees representation. A simple random sample of households in a forest-fringe population might, by chance, contain very few landless households, although their forest dependence is the greatest; stratification by landholding ensures that landless, small, medium and large holders all appear in their proper proportions. Because each stratum is homogeneous, the estimates obtained are also more precise: for the same total sample size, a stratified sample usually has a smaller sampling error than a simple random sample of a mixed population. It further allows separate findings for each subgroup — for instance, comparing the forest dependence of women-headed and men-headed households — which administrators often need. Its costs are that it requires information about every unit's stratum before sampling, and that a poor choice of stratifying variable (one unrelated to the study variables) adds complexity without adding precision. In forestry extension research, stratifying villages by altitude zone or households by landholding and gender of household head is routine good practice.

Mode 3: Cluster Sampling in Detail

Cluster sampling reverses the logic of stratification. Instead of listing every individual, the researcher uses natural groups — clusters — into which the population is already divided: villages, mohallas, schools, health units, forest beats or blocks. A random sample of clusters is drawn, and then either all units in the selected clusters are studied (one-stage cluster sampling) or a random sample of units is drawn within each selected cluster (two-stage cluster sampling,

a common form of multi-stage sampling). Clusters should ideally be as heterogeneous internally, and as similar to one another, as possible — each village a miniature of the district — which is the opposite of the requirement for strata.

The great attraction of cluster sampling is practical economy. It needs no list of individuals, only a list of clusters, and because respondents are concentrated in a few places, travel, supervision and cost per interview fall dramatically — the reason most large household surveys, demographic surveys and extension evaluations use it. A study of grazing practices might randomly select 12 villages out of 180 in a tehsil and survey 25 households in each, rather than chasing 300 households scattered across the whole tehsil. The price of this economy is precision: people within one cluster resemble one another (they share the same forest, market and leadership), so each additional interview in the same village adds less new information than an interview in a fresh village. Statistically, cluster samples have a larger sampling error (the so-called design effect) than simple random samples of the same size, and this must be allowed for in analysis, usually by selecting a larger number of clusters. Used knowingly — many clusters, modest numbers within each, and PPS selection of clusters of unequal size — cluster sampling is the workhorse design for field research in rural and forest areas.

Table 1: The three modes discussed, compared

Feature	Simple random	Stratified random	Cluster
Basis of selection	Individual units drawn by chance from a complete list	Random draw within each subgroup (stratum)	Random draw of whole groups (clusters)

Frame required	Complete list of all units	List of units within each stratum	List of clusters only
Main strength	Simplest, unbiased, error easily computed	Guaranteed representation; greater precision	Lowest cost and travel; no individual list needed
Main weakness	Frame often unavailable; respondents scattered	Needs prior information on every unit	Larger sampling error (design effect)
Typical use	Students from an enrolment list; plots from a register	Households by landholding and gender	Villages selected first, households within them

Conclusion

To conclude, random sampling is probability sampling: every unit has a known, non-zero chance of selection, and chance alone decides who enters the sample, which is what makes scientific generalisation from sample to population possible. Its most popular modes are simple random, systematic, stratified, cluster, multi-stage and probability-proportionate-to-size sampling. Simple random sampling is the pure foundation — fair and statistically clean, but demanding a complete frame. Stratified sampling improves representation and precision by sampling deliberately within homogeneous subgroups. Cluster sampling sacrifices some precision for

large savings in cost and effort by sampling natural groups. The competent researcher chooses among them not by habit but by matching the design to the population, the available frame, the budget and the precision the conclusions require — and in field conditions often combines them, as in a stratified, multi-stage cluster design.

Question 2: Nonrandom Sampling — Definition and Popular Modes in Detail (20 Marks)

Q.2 Define nonrandom sampling. Discuss in detail the most popular modes of nonrandom sampling. (20)

Introduction

Not every research problem can, or should, be studied with a probability sample. Sometimes there is no list of the population and no way to construct one — no register exists of illegal timber cutters, of households practising a sensitive behaviour, or of the members of a newly formed group. Sometimes the purpose of the study is not to estimate a percentage for a whole population but to understand a process, explore a new topic, test an instrument or study a few cases in depth. Sometimes time and funds are so short that interviewing whoever can be reached is the only feasible course. In all these situations researchers use nonrandom, or non-probability, sampling. These methods are not simply careless versions of random sampling; used for the purposes they suit, they are legitimate and sometimes the only possible tools. But they carry a price: because selection probabilities are unknown, the researcher cannot calculate sampling error and cannot statistically generalise the findings to a wider population. This

answer defines nonrandom sampling and then discusses its most popular modes in detail — convenience, purposive (judgement), quota, snowball and accidental/volunteer sampling among them — with their uses, strengths and risks, and closes by comparing non-probability with probability sampling.

Definition of Nonrandom Sampling

Nonrandom (non-probability) sampling is any method of selecting a sample in which the units are chosen by convenience, by the researcher's judgement, by fixed quotas or through the respondents themselves, rather than by a chance procedure; consequently, some units of the population have an unknown chance of selection and others may have no chance at all, and the probability of any particular unit appearing in the sample cannot be stated. The defining marks follow from this. First, there is no need for a complete sampling frame. Second, an element of human choice — the researcher's, the interviewer's or the respondent's — enters the selection. Third, the representativeness of the sample cannot be established statistically; it can only be argued, from knowledge of the population and care in selection. Fourth, findings strictly describe the sample itself; extending them to the population is an act of judgement, not of statistical inference. None of this makes nonrandom sampling 'wrong'. It makes it suited to exploration, depth and hard-to-reach populations, and unsuited to precise population estimates. The researcher's duty is to choose it knowingly, describe it honestly and limit the conclusions to what the design can support.

Mode 1: Convenience (Accidental) Sampling

In convenience sampling the researcher takes the units that are nearest, easiest or quickest to reach: farmers who happen to be at the extension office, students present in a classroom, shoppers leaving a market. It is the cheapest and fastest of all methods, and for that reason the most used — and the most abused. Its legitimate uses are real but narrow: pre-testing a questionnaire, running a quick pilot, or getting a first rough impression before a proper study. Its danger is equally plain. Whoever is conveniently available typically differs systematically from those who are not: farmers visiting an extension office are already more contact-oriented and progressive than those who never come; villagers found at home in the afternoon differ from those working in distant fields. A convenience sample therefore carries an unknown and usually unknowable bias, and percentages computed from it should never be presented as population facts. In course work and exploratory field exercises it is acceptable when labelled as what it is; in a study intended to guide policy it is not.

Mode 2: Purposive (Judgement) Sampling

In purposive sampling the researcher deliberately selects units judged to be typical, informative or important for the purposes of the study, using his or her knowledge of the population. Unlike convenience sampling, the choice is planned and reasoned, not accidental. Common purposive strategies include selecting typical cases (villages judged average for the region), selecting critical or extreme cases (the most successful community forestry village, and the one where the programme collapsed), selecting key informants (elders, forest guards, women collectors, local leaders whose knowledge of the subject is exceptional), and selecting a maximum-

variation sample that deliberately spans the range of conditions. Purposive sampling is the standard selection method in qualitative research, case studies and extension evaluation, where depth of understanding matters more than statistical breadth: ten carefully chosen informants who between them know the whole history of a forest conflict will teach the researcher more than a hundred randomly chosen respondents who know little about it. Its weakness is that the quality of the sample depends entirely on the quality of the researcher's judgement and knowledge; a mistaken idea of what is 'typical' is built silently into every finding, and there is no statistical way to check it. Transparent reporting of the selection criteria is therefore essential.

Mode 3: Quota Sampling

Quota sampling is the non-probability method that most closely imitates stratified sampling. The population is divided into categories — for example sex, age group, occupation or landholding — and the researcher fixes a quota for each category in proportion to its share in the population. Interviewers are then sent out with instructions such as: interview 200 respondents, of whom 100 men and 100 women; within each sex, so many farmers, labourers and traders; until each quota is filled. Within the quota, however, the choice of the actual person is left to the interviewer's convenience and judgement, and it is this that keeps the method non-probabilistic. Quota sampling became famous through opinion polling and market research because it is fast, needs no frame, and produces a sample that matches the population on the controlled characteristics. Its risks are the within-quota biases: interviewers naturally approach the accessible, the cooperative and the respectable, so the sample may match the

population on age and sex while differing on exactly the attitudes under study. Historical polling failures, where quota samples confidently predicted the wrong election result, are the standing warning. Careful interviewer training, fixed call-back rules and varied locations reduce, but cannot remove, this bias.

Mode 4: Snowball Sampling

In snowball (chain-referral) sampling the researcher begins with a few identified members of the population under study and asks each of them to name or introduce others like themselves, who in turn refer further members, so that the sample grows like a snowball rolling downhill. This is the method of choice for hidden, rare or stigmatised populations that no list can capture: households engaged in illicit felling, families using a particular traditional healer, members of an informal savings group, or farmers who have quietly adopted an unapproved practice. A conventional survey would find almost none of them; through trust and referral, the researcher reaches one network after another. The method's strengths are access and trust — an introduction from an insider opens doors that a stranger's knock does not. Its weaknesses are structural: the sample is confined to connected networks, isolated members are missed entirely, the starting seeds strongly shape who is found, and friends tend to resemble friends, so the sample over-represents the socially connected and the like-minded. Findings from a snowball sample describe the networks reached; they cannot support population percentages, and researchers must also guard confidentiality carefully, since referral itself can expose membership of a sensitive group.

Other Modes: Volunteer and Dimensional Sampling

Two further modes deserve mention. Volunteer (self-selected) sampling consists of people who offer themselves — respondents to a newspaper or online appeal, farmers who volunteer for a new trial. It is quick and produces willing, articulate respondents, but volunteers differ systematically from non-volunteers, usually in interest and education, so the bias is severe. Dimensional sampling, a refinement of quota sampling used in exploratory studies, ensures that at least one case is taken for every combination of the dimensions judged important — for example, for a study of forest use, at least one household combining each landholding class with each distance-from-forest band — so that no important type is entirely absent from a small exploratory sample. Both methods share the family character of non-probability sampling: deliberate or accidental human selection, no measurable error, and conclusions limited to the cases studied.

Table 1: Popular modes of nonrandom sampling at a glance

Mode	How units are chosen	Best suited to	Chief risk
Convenience	Whoever is easiest to reach	Pilots, pre-tests, quick exploration	Strong unknown bias
Purposive / judgement	Researcher selects typical, critical or expert cases	Qualitative studies, case studies, key informants	Depends wholly on researcher's judgement

Quota	Fixed numbers per category; choice within quota left to interviewer	Polls, market and opinion research	Within-quota interviewer bias
Snowball	Respondents refer further respondents	Hidden, rare or sensitive populations	Confined to connected networks; misses isolates
Volunteer	People offer themselves	Appeals, trials needing willing subjects	Volunteers untypical of the population

Nonrandom and Random Sampling Compared

The comparison can be summarised briefly. Random sampling needs a frame, costs more and takes longer, but gives every unit a known chance, permits the calculation of sampling error and supports generalisation to the population. Nonrandom sampling needs no frame, is quicker and cheaper, gives access to populations and depths that probability methods cannot reach, but leaves representativeness unknown and generalisation unjustified in the statistical sense. The choice between them is therefore not a choice between good and bad method; it is a choice between kinds of question. 'What proportion of households in this district depend on the forest for fuel?' demands a probability sample. 'How did this village's forest protection system emerge, and why did it survive?' demands purposive selection of informants and cases.

Mature research programmes regularly combine both: qualitative, purposively sampled work to understand the problem and design good questions, followed by a probability-sampled survey to establish how widespread the findings are.

Conclusion

In conclusion, nonrandom sampling selects units by convenience, judgement, quota or referral rather than by chance, so that selection probabilities are unknown and statistical generalisation is not possible. Its most popular modes – convenience sampling for quick exploration, purposive sampling for typical, critical and expert cases, quota sampling for category-balanced polls, snowball sampling for hidden populations, and volunteer sampling — each solve a genuine practical problem that random sampling cannot. Their shared obligation is honesty: the researcher must state how the sample was chosen, acknowledge the bias it may contain, and confine the conclusions to what such a sample can bear. Chosen knowingly and reported transparently, nonrandom sampling is an indispensable part of the researcher's toolkit; presented as if it were a probability sample, it becomes a source of confident error.

Question 3: Conducting a Survey Study by Questionnaire (20 Marks)

Q.3 How can a researcher conduct a survey study by questionnaire? Discuss. (20)

Introduction

The survey is the most widely used method of social and extension research: instead of observing a whole population, the researcher asks a sample of people a standard set of questions and generalises from their answers. The questionnaire is the survey's central

instrument — a carefully ordered, written set of questions to which respondents give answers that can be compared, counted and analysed. A questionnaire survey looks deceptively simple, and precisely for that reason it is often done badly: vague questions, a haphazard sample and a low response rate produce neat tables of meaningless numbers. Done properly, it proceeds through an ordered sequence of stages, from defining the problem to writing the report, and at every stage decisions are taken that determine the value of the final findings. This answer walks through those stages in the order a researcher actually follows them, paying particular attention to the design of the questionnaire itself, to pre-testing, to administration and follow-up, and to the processing and reporting of results, using examples relevant to forestry extension research.

Stage 1: Defining the Problem, Objectives and Population

Every survey begins before any question is written, with a clear statement of the problem and the objectives. The researcher specifies exactly what is to be found out (for example, the extent and pattern of household dependence on a community forest, and the factors associated with it), reviews the available literature and existing records, frames the specific research questions or hypotheses, and identifies the variables to be measured. At the same time the population must be defined precisely — 'all households resident in the twelve villages adjoining the X forest during the survey season' is a workable definition; 'forest users' is not. The unit of analysis (household or individual), the respondent (usually the household head or, for questions about fuelwood and fodder, the woman who collects them) and the geographical and time boundaries are all fixed at this stage. Time spent here is never wasted: most defective

questionnaires are defective because the researcher began writing questions before deciding what the study was for.

Stage 2: Deciding the Sample and the Mode of Administration

Next the researcher decides whom to ask and how to reach them. For generalisable results a probability sample is drawn, as discussed in Question 1, with a size large enough for the comparisons planned but not so large that field quality suffers. The mode of administration is chosen at the same time, because it controls how the questionnaire may be written. The main modes are: the mailed (or online) self-administered questionnaire, cheap over wide areas but dependent on literacy and prone to low response; the personally administered or interview-administered questionnaire, in which a trained enumerator reads the questions and records answers — more costly, but essential where literacy is low, and the normal mode in rural Pakistan; the telephone survey, fast but excluding households without phones; and the group-administered questionnaire, completed by assembled respondents such as a class or a village meeting, which gives high completion but risks discussion among respondents. In forestry extension fieldwork the interview-administered mode, often called an interview schedule, is dominant, and the questionnaire must then be written so that it can be read aloud naturally and translated accurately into the local language.

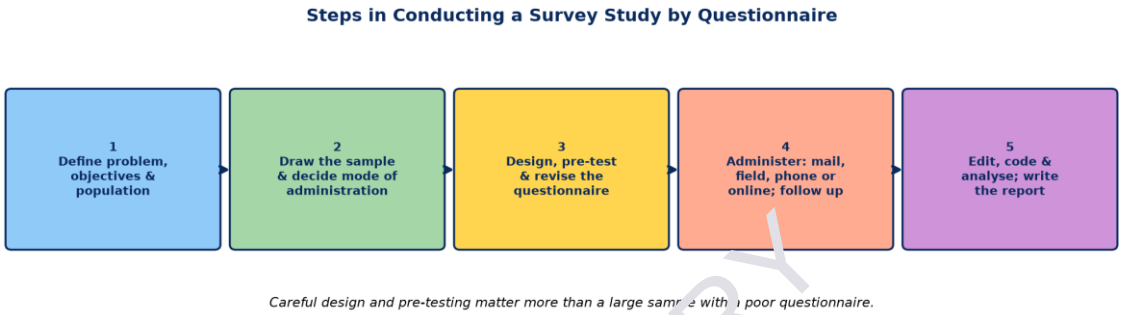

Figure 1: The five stages of a questionnaire survey, from defining the problem to reporting the findings.

Stage 3: Designing the Questionnaire

Designing the questionnaire is the heart of the study. The researcher works from the objectives, listing the information each objective requires, and drafts questions item by item. Two broad kinds of question are used. Closed (structured) questions offer fixed response categories — yes/no, multiple choice, rating scales such as the Likert format, or ranked options — and are easy to answer, code and analyse, though they may force complex views into crude boxes. Open-ended questions let the respondent answer in his or her own words; they yield richer material and unexpected insights, but are harder to record and to code. Most good questionnaires mix the two: closed items for the measurable core, open items for reasons, explanations and suggestions. The wording rules are strict and practical: use simple, familiar words; ask one thing at a time (never 'Do you collect fuelwood and fodder from the forest?'); avoid leading questions that suggest the desired answer; avoid vague quantifiers such as 'often' where a definite period can be specified ('In the last seven days, on how many days…?'); avoid questions beyond the respondent's knowledge or memory; and handle sensitive matters

(income, illegal cutting) indirectly, late in the questionnaire, and with assurances of confidentiality.

The arrangement of the questionnaire matters almost as much as its wording. It should open with easy, interesting, non-threatening questions that build confidence; move from general to specific and from factual items to opinions; group questions by topic so the conversation flows; place demographic items and sensitive items towards the end; and close with an open invitation for additional comments and a word of thanks. Every questionnaire needs an introduction or covering explanation stating who is conducting the study, its purpose, that participation is voluntary, that answers are confidential and will be used only in aggregate, and roughly how long it will take. Questions are numbered, response categories are given code numbers in advance where possible, and clear instructions ('tick one box', 'rank in order') accompany each section. Length is a discipline: a questionnaire that takes more than about thirty to forty-five minutes invites fatigue, refusal and careless answers, however worthy its items.

Stage 4: Pre-Testing and Revision

No questionnaire should go into the field untested. In the pre-test (pilot), the draft is administered to a small number of respondents — commonly ten to thirty — drawn from the same kind of population but outside the main sample. The pre-test reveals what the researcher, too close to the instrument, cannot see: questions that are misunderstood or understood in several ways, categories that do not cover real answers, items everyone answers identically (and which therefore measure nothing), questions that embarrass or offend, faulty ordering,

translation problems, and the true time required. For interview-administered surveys, the pre-test also trains the enumerators, who then report ambiguities from the respondent's side. The questionnaire is revised on this evidence — sometimes more than once — and only the revised version is printed or programmed for the main fieldwork. Skipping the pre-test to save a few days is the commonest false economy in survey research, because errors built into the instrument cannot be corrected once a thousand interviews have been completed.

Stage 5: Administration, Follow-Up and Field Control

Administration must secure both a high response rate and honest, careful answers. For mailed or online surveys this means a courteous invitation, a deadline, and a planned sequence of reminders — typically two or three follow-ups, the last possibly by telephone or personal visit — because non-respondents often differ from respondents, and a 30 percent response can bias findings more than a small sample would. For field-administered surveys it means recruiting and training enumerators (in the study's purpose, the meaning of each question, neutral probing, recording conventions, and ethical conduct), preparing village lists and maps, informing local leaders and obtaining community consent before interviewing, supervising work in the field, and checking a sample of completed questionnaires each evening for blanks, inconsistencies and signs of fabrication, so that errors are caught while return visits are still possible. Ethical requirements run through the whole stage: informed consent, the right to decline any question or to stop, privacy during the interview, and secure, anonymous storage of the completed forms.

Stage 6: Processing, Analysis and Reporting

Completed questionnaires are first edited: checked for completeness and consistency, with impossible or contradictory entries resolved by rule, not by guess. Open-ended answers are then coded — grouped into categories that capture their meaning — and all responses are entered into a computer file, with double-checking of entry and cleaning of the data before analysis. Analysis proceeds from the simple to the complex: frequency distributions and percentages for each item; cross-tabulations to compare groups (for example, forest dependence by landholding class or by distance from the forest); measures of association and, where the design permits, statistical tests and scale scores; always interpreted against the objectives set at the start, not as a tour of every table the computer can produce. Non-response and its possible bias are examined and reported, not hidden. The final report states the problem, the population and sample, the instrument and how it was pre-tested, the response rate, the findings in tables and figures with interpretation, the limitations, and conclusions and recommendations that follow from the evidence. A questionnaire, the codebook and the dataset are preserved so that the study can be checked or extended by others.

Table 1: Modes of administering a questionnaire compared

Mode	Cost and speed	Response rate	Main limitation
Mailed / online self-administered	Lowest cost; wide reach; fast	Often low without follow-ups	Needs literacy and addresses; no help for the respondent

Interview-administered (schedule)	Highest cost; slow	High; almost complete	Needs trained enumerators; interviewer effect
Telephone	Moderate; very fast	Moderate	Excludes households without phones; short interviews only
Group-administered	Low; very fast	Very high completion	Respondents may influence one another

Conclusion

To conclude, a researcher conducts a survey study by questionnaire through six connected stages: define the problem, objectives and population precisely; decide the sample and the mode of administration; design the questionnaire with carefully worded, well-ordered closed and open questions; pre-test and revise it on real respondents; administer it with trained staff, ethical safeguards and persistent follow-up; and finally edit, code, analyse and report the results with their limitations stated. The quality of a survey is decided less by the size of its sample than by the care taken at each of these stages — above all, by clear objectives, honest sampling and a tested questionnaire. A researcher who respects that sequence will produce findings a decision-maker can trust; one who rushes to printing questions will produce only the appearance of research.

Question 4: Strengths and Problems of Qualitative Research (20 Marks)

Q.4 What are the strengths and problems of qualitative research? (20)

Introduction

Qualitative research studies social life in its natural setting and in the participants' own terms. Instead of counting and measuring, it asks what things mean to the people involved, how processes unfold, and why people act as they do — using methods such as in-depth interviewing, observation, focus group discussion, case study and the analysis of documents and life histories. It produces words, descriptions and interpretations rather than numbers. In fields such as forestry extension, where the success of a programme turns on trust, custom, power and local knowledge, qualitative inquiry is often the only way to learn what is really happening. Yet the same features that give qualitative research its power create its difficulties: it is open to charges of subjectivity, its samples are small, and its findings do not generalise statistically. A balanced judgement requires both sides to be set out honestly. This answer first examines the principal strengths of qualitative research, then its principal problems, and finally indicates how good qualitative researchers respond to those problems without surrendering the method's distinctive value.

Strength 1: Depth, Richness and Meaning

The outstanding strength of qualitative research is the depth and richness of the understanding it produces. A survey can establish that 62 percent of households oppose a new forest

protection rule; only qualitative work can uncover what the rule means to them — that grazing bans are experienced as an attack on the poor, that a particular official is distrusted because of an old dispute, that 'protection' in local usage implies exclusion of outsiders but not of customary users. Because the qualitative researcher listens to people in their own words, concepts emerge from the field rather than being imposed in advance; variables and explanations the researcher never imagined frequently turn out to be the ones that matter. This depth makes qualitative research unmatched for exploring new topics, for understanding sensitive or complex behaviour, and for explaining the unexpected results of quantitative studies — the 'why' behind the numbers. Thick description of cases also gives findings a human credibility with practitioners and communities that tables rarely achieve.

Strength 2: Process, Context and Flexibility

Qualitative research studies phenomena in context and over time. Social life is not a set of isolated variables; a community forestry programme succeeds or fails within a web of land tenure, kinship, markets, local politics and history, and qualitative methods keep that web intact instead of stripping it away for measurement. Observation and repeated interviewing also capture process — how a committee gradually changed, how a conflict built up and was settled, how an innovation was adapted step by step — where a one-shot survey sees only a frozen outcome. The design is correspondingly flexible: the researcher may pursue a promising lead, add informants, revise questions and even reformulate the research problem as understanding grows, rather than being locked into an instrument fixed before fieldwork. This

emergent character is a methodological strength when the territory is unknown; premature precision, measuring the wrong thing exactly, is avoided.

Strength 3: Giving Voice and Practical Usefulness

Qualitative research gives a voice to people whom statistics tend to render invisible. Women collectors, landless labourers, minority groups and remote hamlets appear in survey tables, if at all, as small percentages; in qualitative work they can be purposively selected as informants and their experience recorded in full. For extension and development work this has direct practical value: findings identify needs, obstacles and locally acceptable solutions, and the participatory character of much qualitative fieldwork builds the rapport and community involvement on which later programmes depend. Qualitative studies are also comparatively economical for small-scale inquiry — a single skilled researcher with a notebook can produce a useful case study where a survey team cannot be afforded — and they generate the concepts, questions and hypotheses that later quantitative research can test on a larger scale. In a complete research programme the two approaches are partners, not rivals.

Problem 1: Subjectivity and Researcher Bias

The most serious charge against qualitative research is subjectivity. The researcher is the instrument: he or she selects the informants, asks the questions, decides what to record and constructs the interpretation. Personal background, sympathies and prior theory can shape every one of those choices, and two researchers may return from the same village with different accounts. Related risks include going native — over-identifying with informants and losing critical distance — and its opposite, imposing outside categories on local meanings.

Unlike a questionnaire, the procedure is difficult to standardise, and unlike an experiment it cannot be exactly repeated, so the classical tests of reliability sit awkwardly. Honest qualitative practice answers these charges procedurally rather than by denial: keeping detailed field notes and an audit trail, recording and transcribing interviews, searching deliberately for cases that contradict the emerging interpretation, checking interpretations with informants (member checking), triangulating across methods and informants, and declaring the researcher's own position in the report. These steps do not make the work objective in the laboratory sense, but they make its reasoning visible and challengeable.

Problem 2: Small Samples and the Generalisation Problem

Qualitative studies rest on small, purposively chosen samples — a handful of villages, a score of informants. Findings therefore cannot be generalised to a population in the statistical sense: a moving account of one community's successful forest committee does not show how many communities could replicate it, or even whether the causes identified were the decisive ones. Critics add that case selection is often opaque — why this village and not its neighbour? Qualitative researchers reply that their aim is a different kind of generalisation: analytic or theoretical generalisation, in which a well-understood case refines a concept or mechanism that readers can judge for transferability to their own settings, aided by thick description. The reply is legitimate, but the limitation is real: questions of extent, frequency and distribution — how many, how much, how widespread — are simply not questions a small qualitative sample can answer, and presenting case findings as if they were population facts is a misuse of the method.

Problem 3: Time, Skill and Data Overload — and Ethical and Access Problems

Qualitative research is slow and skill-hungry. Fieldwork takes weeks or months; hours of recorded talk become hundreds of pages of transcript; analysis is a demanding craft of coding, comparing and interpreting for which there is no mechanical procedure, and the sheer volume of unstructured material can overwhelm an inexperienced researcher into selective quotation — choosing the vivid extract that supports a prior opinion. Access and ethics raise further problems. Winning trust in a community, especially on sensitive matters such as illegal felling or internal conflict, takes time and may fail altogether. The closeness of the relationship creates ethical burdens unknown to the survey researcher: informants may reveal more than they would wish in print; complete anonymity is hard to guarantee in a small, described community; and the researcher may witness practices (including unlawful ones) that create conflicts between confidentiality and obligation. Finally, qualitative findings are sometimes dismissed by administrators and funders who equate rigour with numbers, so the researcher must work harder to demonstrate quality — a practical problem of acceptance, even where the work itself is sound.

Table 1: Strengths and problems of qualitative research — summary

Aspect	Strength	Problem
Understanding	Deep, rich insight into meanings and reasons	Interpretation depends on the researcher's skill and stance

Design	Flexible and emergent; follows new leads	Hard to standardise or replicate exactly
Setting	Studies real life in context, and processes over time	Slow; long fieldwork and heavy analysis
Sample	Reaches hidden groups; gives voice to the marginal	Small and purposive; no statistical generalisation
Data	Words and observation reveal what numbers miss	Volume overload; risk of selective quotation
Use	Generates concepts, hypotheses and practical solutions	Findings may be dismissed as 'anecdotal' by number-minded users

Conclusion

In conclusion, the strengths of qualitative research are depth of understanding, attention to meaning, context and process, flexibility of design, and the capacity to hear those whom numbers overlook; its problems are subjectivity and researcher bias, small non-representative samples that cannot support statistical generalisation, heavy demands of time and skill, risks in handling large volumes of unstructured data, and ethical and access difficulties arising from close involvement with informants. None of the problems is fatal, and each has recognised procedural remedies — triangulation, member checking, negative-case analysis, transparent

reporting and ethical care — but the problems do define the method's proper territory. Qualitative research answers questions of meaning, process and explanation; for questions of number and distribution it should hand over to, or combine with, quantitative methods. Judged on its own ground, it is not a soft substitute for 'real' research but a distinct and rigorous way of knowing social life.

Question 5: Designing Qualitative Research and the Steps Involved (20 Marks)

Q.5 How is qualitative research designed? What are the steps involved in doing qualitative research? (20)

Introduction

To a beginner, qualitative research can look undesigned — a researcher simply goes to a village, talks to people and writes up what was heard. In reality, qualitative research is designed as carefully as any survey; the design is simply of a different kind. Where a quantitative design fixes everything in advance (the sample, the instrument, the analysis plan) and treats deviation as error, a qualitative design fixes the purpose, the setting, the initial questions and the standards of evidence, while deliberately leaving room to learn: the design emerges and tightens as fieldwork proceeds. This is sometimes called an emergent or flexible design, and it is a strength, not an absence of planning, because in unknown territory the most important discoveries are the ones the researcher did not foresee. This answer explains how a qualitative study is designed — its characteristic choices about questions, site and participants, methods

and strategy — and then sets out, step by step, how a qualitative study is actually carried out, from the first formulation of the topic to the final written account, with the safeguards of quality that belong at each step.

How Qualitative Research Is Designed

A qualitative design is built around a small number of organising decisions. First, the research purpose and questions are stated in open form: not hypotheses to be tested but questions of meaning and process — 'How do women collectors experience the new grazing rules?', 'How did this village build and sustain its forest protection system?' Second, a strategy or tradition is chosen that fits the question: ethnography for the culture and daily life of a community; case study for the bounded, in-depth examination of a particular village, programme or organisation; phenomenology for the lived experience of a phenomenon; grounded theory where the aim is to build an explanation from the data themselves; or narrative and life-history approaches where individual experience over time is the focus. Third, the site and participants are selected purposively — chosen because they are information-rich, typical, critical or contrasting, according to the logic set out in Question 2 — with the numbers left flexible, to be governed by saturation, the point at which new informants add no substantially new information. Fourth, the methods of data collection (observation, in-depth and key-informant interviewing, focus groups, documents) and the researcher's role in the setting (observer, participant-observer, facilitator) are chosen, together with the ethical arrangements: consent, confidentiality, reciprocity and protection of informants. Finally, the design states in outline how analysis and

verification will proceed, since in qualitative work analysis is not a final phase bolted on at the end but a companion of data collection from the first day.

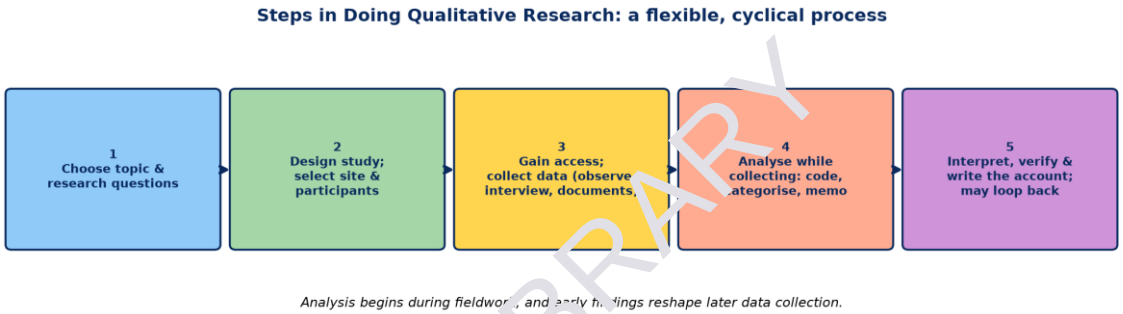

Figure 1: The steps of qualitative research form a cycle rather than a straight line — analysis during fieldwork repeatedly redirects collection until the picture is complete.

Step 1: Choosing the Topic and Formulating the Research Questions

The study begins with a topic arising from a practical problem, a gap in knowledge, a puzzling observation or personal experience — for instance, why two apparently similar villages responded oppositely to the same community forestry programme. The researcher reviews what is already written, not to assemble a rigid framework but to learn what is known, what concepts are in use and what remains unexplained, and talks informally with practitioners. From this, broad guiding questions are framed and the boundaries of the study are drawn: which community or cases, which period, which aspects of life. The questions stay deliberately open — 'how' and 'what' questions rather than 'how many' — and the researcher expects them to sharpen, and sometimes to change, in the field. A short design note or proposal records the purpose, questions, proposed site and methods, and the ethical undertakings, so that supervisors, funders and host communities can judge the study before it begins.

Step 2: Selecting the Site and the Participants

With the questions framed, the researcher selects the research site and the participants purposively. A site may be chosen as typical of a class (an average forest-fringe village), as a critical case (the programme's showcase success, where if the explanation fails anywhere it should fail there), or as one of a contrasting pair chosen for maximum variation. Within the site, informants are selected for what they know and represent: key informants such as elders, officials, teachers and forest guards; ordinary participants across the divisions that matter locally — women and men, rich and poor, old and young, users and non-users; and, as the study develops, informants chosen theoretically, to test and extend the emerging interpretation, including people expected to disagree with it. Numbers are not fixed in advance: interviewing continues to saturation. Practical criteria — permission to work in the site, safety, language, and the presence of a local contact or gatekeeper who can make introductions — are part of the design decision, not afterthoughts, since a theoretically perfect site that cannot be entered yields no study at all.

Step 3: Gaining Access, Building Rapport and Attending to Ethics

Before systematic data collection, the researcher must gain legitimate access and build the trust on which honest talk depends. Formal permissions (from authorities, programme managers or community leaders) are obtained, and the study is explained in plain language to participants: who the researcher is, what the study is for, what participation involves, that it is voluntary, that anyone may decline or withdraw, and how the material will be used and protected. Informed consent in qualitative work is a continuing relationship rather than a

signed form alone, renewed as the study enters more sensitive ground. The researcher negotiates his or her role — helping in daily work, attending meetings, being present without directing — and begins to learn the setting: its geography, seasons, institutions and language. Time invested in entry and rapport is repaid throughout the study; rushed entry produces guarded, formal answers and, in communities tired of visiting officials, outright refusal.

Step 4: Collecting the Data

Data collection in qualitative research normally combines several methods, chosen and adjusted as the study proceeds. Participant and non-participant observation records what people actually do — meetings, grazing practices, collection trips, committee decisions — in detailed field notes written the same day, separating description from the researcher's reflections. In-depth, semi-structured interviewing explores experience and meaning: an interview guide lists topics and opening questions, but the order and wording follow the conversation, with probes ('Can you give me an example?', 'What happened then?') drawing out depth; interviews are recorded with permission or noted fully, and transcribed promptly. Focus-group discussions reveal shared norms and public disagreement; documents, records, maps, photographs and life histories add independent evidence. Throughout, the researcher keeps a field diary and writes analytic memos — early hunches, emerging categories, questions to pursue — so that collection is progressively focused: early fieldwork is broad and exploratory, later fieldwork tests and fills the developing account. Collection ends not at a preset number but at saturation and at a judgement that the evidence is sufficient and varied enough to answer the questions.

Step 5: Analysing and Interpreting the Data

Analysis begins during collection and becomes the main work after it. Transcripts, field notes and documents are read closely and coded: segments of text are labelled with codes capturing their content ('fuelwood scarcity', 'distrust of committee', 'women's workload'), first openly and descriptively, then in a more focused way as patterns appear. Codes are grouped into categories and themes; constant comparison — of one informant against another, one incident against the next, data against emerging ideas — refines the categories and builds relationships among them into an interpretation: an account of how and why things happen in this setting, expressed in concepts that stay close to the participants' meanings while rising above any single quotation. The researcher actively searches for negative cases that do not fit, and revises the interpretation until it accommodates them or honestly records the exception. Verification is woven through the work: triangulation across methods, informants and occasions; member checking, in which summaries are taken back to participants for correction; peer discussion of coding and interpretation; and an audit trail of notes, memos and decisions that lets another researcher follow how the conclusions were reached. Software can organise large bodies of text, but the interpreting remains the researcher's own intellectual work.

Step 6: Writing and Presenting the Account

The final step is writing the qualitative report, which is itself an analytic act: many interpretations are completed only in the writing. The report states the questions and the setting in enough detail (thick description) for readers to judge where the findings might transfer; describes the selection of site and informants, the methods and the researcher's role

with candour; and presents the findings organised by theme, supported by carefully chosen quotations and observed incidents that let participants' voices be heard, with the researcher's interpretation clearly distinguished from the evidence. Conclusions answer the original questions, note the study's limitations, and draw out implications for practice and for further research. Drafts are commonly shared with key informants or the host community before finalisation, both as a check and as an obligation of reciprocity. Where findings are returned in accessible form — a village meeting, a summary in the local language — the study completes the ethical circle: the knowledge leaves something behind with the people who produced it.

Table 1: Steps in qualitative research and the main task at each step

Step	Main task	Key quality safeguard
1. Topic and question	Frame open 'how/what' questions; review literature	Questions stay open; boundaries stated
2. Site and participants	Purposive selection of site and information-rich informants	Selection criteria made explicit; seek variation
3. Access and ethics	Permissions, consent, rapport, agreed role	Continuing informed consent; confidentiality
4. Data collection	Observation, in-depth interviews, groups, documents	Full field notes; recording with permission; saturation

5. Analysis and interpretation	Coding, categories, constant comparison, explanation	Triangulation, member checking, negative cases
6. Writing the account	Thick description, evidence, interpretation, implications	Audit trail; findings returned to participants

Conclusion

In conclusion, qualitative research is designed flexibly but deliberately: open research questions, a chosen strategy such as ethnography or case study, purposive selection of an information-rich site and participants, a planned combination of observational and conversational methods, explicit ethical arrangements, and analysis built into the design from the start. Doing it proceeds through six connected steps — formulating the topic and questions; selecting the site and participants; gaining access and building trust; collecting data by observation, interview and documents until saturation; analysing and interpreting through coding, comparison and verification; and writing a well-evidenced account whose findings are returned to the participants. The steps form a cycle rather than a railway line, since early analysis constantly redirects later collection. That disciplined flexibility is exactly what allows qualitative research to discover what the researcher did not already know — which is, after all, the point of doing research.