NTA

UGC

NET SET JRF

68

upto JUNE **2025** PAPERS

Previous Years' Solved Papers

UNIT WISE & TOPIC WISE

with

Complete Chapter Notes

PAPER- 1 (COMPULSORY)

TEACHING AND RESEARCH APTITUDE

- Comprehensive Theory
- 3500+ PYQs
- Detailed Explanations
- 17 Years PYQs

Contents

December 2023 Session

Units

SET

1

GENERAL PAPER [27 JUNE 2025 (E)]

Comprehension:

Study the table carefully and answer the questions:

The given data is regarding the number of paperback and hardbound books sold by four different book shops A, B, C and D:

Shops	Number of Hardbound books sold	Number of Paperback books sold
A	3500	2000
B	3900	5200
C	4400	5500
D	5500	6600

1. Number of total books (hardbound and paperback together) sold by the highest selling shop is what percent higher than the lowest selling shop?

(1) 50% (2) 100%

(3) 120% (4) 150%

2. What is the ratio between total number of hard bound books sold by shop C and D together and number of paperback books sold by shop D?

(1) 2 : 1 (2) 5 : 4

(3) 3 : 2 (4) 9 : 7

3. Number of hardbound books sold by shop A is approximately what percent less than the number of paperback books sold by shop C?

(1) 32 (2) 36

(3) 38 (4) 42

4. What is the difference between the average number of hardbound books sold by shops A, B and D and the average number of paper back books sold by shops C and D?

(1) 267 (2) 400

(3) 1570 (4) 1750

5. What is the ratio between total sale by shops A and C together to the total sale by shops B and D?

(1) 77 : 106 (2) 73 : 102

(3) 17 : 33 (4) 21 : 27

6. Match List-I with List-II:

List - I		List - II	
A.	Goals are decided in the context of the needs of a nation	**I.**	Modern Teaching Technology
B.	Feedback is obtained at local level	**II.**	Traditional Teaching Technology
C.	Team Teaching	**III.**	Instructional Technology
D.	Time for completion of a task is same for all students.	**IV.**	Educational Technology

Choose the **correct** answer from the options given below:

(1) A-IV, B-II, C-1, D-III

(2) A-IV, B-III, C-1, D-II

(3) A-II, B-1, C-IV, D-III

(4) A-III, B-1, C-IV, D-II

7. Arrange the following steps in model of listening in sequence:

A. Interpreting B. Responding

C. Remembering D. Hearing

E. Understanding

Choose the **correct** answer from the options given below :

(1) E, C, A, B, D (2) D, E, C, A, B

(3) D, A, B, C, E (4) A, B, D, E, C

8. Arrange the areas for following shapes in descending order of their values:

A. The area of the curved surface of a cylindrical wire of radius 1.0 mm and length 3.5 cm

B. The surface of a spherical ball of radius 3.5 mm

C. The area of a rhombus having diagonals 1.5 cm and 1.8 cm

D. The area of a circle of diameter 7.0 mm.

Choose the **correct** answer from the options given below:

(1) D, B, C, A (2) A, B, C, D

(3) B, A, C, D (4) C, A, B, D

9. The study of how the mind creates knowledge has resulted in what are currently referred to as view of Education.

(1) Pragmatic (2) Idealistic

(3) Metacognitive (4) Constructive

10. Match List I with List II:

List I (Words)		List II (Descriptions)	
A.	Asiddha	**I.**	Irrelevant middle term
B.	Badhita	**II.**	Unproven middle term
C.	Viruddha	**III.**	Contrary middle term
D.	Satmyabhīchār	**IV.**	Contradictory middle term

Choose the correct answer from the options given below:

(1) A-I, B-II, C-III, D-IV

(2) A-II, B-IV, C-III, D-I

(3) A-II, B-III, C-I, D-IV

(4) A-III, B-IV, C-II, D-I

11. What is the full form of ARPANET?
(1) Advanced Research Project Agency Network
(2) Advanced Resource Project Agency Network
(3) Applied Research Project Agency Network
(4) American Research Project Agency Network

12. Vyapti in Indian Logic refers to :
(1) Logical contradiction (2) Direct perception
(3) Invariable concomitance (4) Verbal testimony

13. Arrange the steps of evaluation of a deductive argument in the correct sequence:
A. Determination of the truth of premises
B. Verification of the relevance of premises and conclusion
C. Examination of the logical structure
D. Determination of validity
Choose the correct answer from the options given below:
(1) A, B, C, D (2) A, C, B, D
(3) B, C, A, D (4) D, B, A, C

14. Which of the following is **not** an element of communication within the communication process cycle?
(1) Channel (2) Receiver
(3) Sender (4) Time

15. Match List-I with List-II:

List - I (Ecosystem)		List - II (Biogeographic Realms)	
A.	Eurasia	**I.**	Neotropical realm
B.	South and South East Asia	**II.**	Palearctic realms
C.	North America	**III.**	Nearctic realm
D.	South America	**IV.**	Oriental realm

Choose the **correct** answer from the options given below:
(1) A-II, B-IV, C-III, D-I (2) A-II, B-I, C-III, D-IV
(3) A-III, B-IV, C-I, D-II (4) A-II, B-III, C-IV, D-I

16. Find out the 'RIGHT' combinations below:
A. Learning a second language takes little time and efforts - Myth
B. All bilinguals easily maintain both languages - True
C. Learning a second language takes little time and efforts - True
D. All bilinguals easily maintain both languages - Myth
Choose the **correct** answer from the options given below:
(1) A and D Only (2) B and C Only
(3) A and B Only (4) C and D Only

17. Match List-I with List-II:

List-I		List-II	
A.	The source is not visible to the receiver because of Geographical distance	**I.**	Technical Barriers to Communication
B.	The people are having individual differences, motivation and attitude and anxiety and prejudice	**II.**	Linguistic Barriers to Communication
C.	With faulty expression, poor translation, ambiguous words	**III.**	Psychological Barriers to Communication
D.	With poor quality of audio and video signals, the message may not be sent to target group	**IV.**	Physical Barriers to Communication

Choose the **correct** answer from the options given below:
(1) A-IV, B-III, C-II, D-I (2) A-IV, B-I, C-III, D-II
(3) A-II, B-I, C-IV, D-III (4) A-III, B-II, C-I, D-IV

18. Choose the correct statements:
A. MS-Word saves the files in '.doc' format
B. SQL server is a local network server
C. 'MATLAB' is a mathematical software
D. Bootstrap loader is an example of entertainment software
Choose the **correct** answer from the options given below:
(1) A and B Only (2) A and C Only
(3) C and D Only (4) A and D Only

19. Select correct order of finalising a research problem:
A. Defining the research problem
B. Selecting the area of research
C. Finding the research gap
D. Study of reference material and reports of previous researches
E. Identifying a research problem
Choose the **correct** answer from the options given below:
(1) B, C, D, A, E (2) D, B, C, E, A
(3) B, D, C, E, A (4) D, B, A, C, E

20. Match List - I with List - II:

List - I (Institutions of National Importance (INI) Acts)		List - II (Year of Enactment)	
A.	National Institute of Technology Act	**I.**	2017
B.	Indian Institute of Management Act	**II.**	1961
C.	Indian Institutes of Information Technology Act	**III.**	2007
D.	Institutes of Technology Act	**IV.**	2014

Choose the **correct** answer from the options given below:
(1) A-III, B-I, C-IV, D-II
(2) A-II, B-III, C-IV, D-I
(3) A-IV, B-I, C-II, D-III
(4) A-II, B-IV, C-I, D-III

21. What is the sum of the first 15 terms of the following series?
$2^2, 3^2, 4^2, 5^2, ...$
(1) 1261 (2) 1240
(3) 1239 (4) 1259

Choose the **most appropriate** answer from the options given below:

(1) A and D Only (2) B and C Only

(3) A, C and D Only (4) A, B, and C Only

Comprehension: Read the following passage and answer the **questions: 46 : 50**

A person who takes the trouble to form his own opinions and beliefs, will feel that he owes no responsibility to the majority for his conclusions. If he is a genuine lover of truth, if he is inspired by a passion for seeing things as they are and an abhorrence of holding ideas which do not conform to facts, he will be wholly independent of the assent of those around him. When he proceeds to apply his beliefs in the practical conduct of life, the position is different. There are then good reasons why his attitude should be less inflexible. The society in which he is placed is an ancient and composite growth. The people from whom he dissents have not come by their opinions, customs and by a process of mere haphazard.

These opinions and customs all had their origin in a certain real supposed fitness. They have certain depth of root in the lives of a proportion of the existing generation. Their congruity with one another may have come to an end. That is only one side of the truth. The most zealous propagandism cannot penetrate to them. In common language, we speak of a generation as something possessed of a kind of exact unity, with all its parts and members homogenous. Yet, plainly it is not this. It is a whole but a whole in a state of constant flux, its factors and elements are eternally shifting. It is not one but many generations.

46. A genuine lover of truth will:

(1) appreciate the quality of food

(2) make compromise with situation

(3) criticise what he does not like

(4) be wholly independent of the assent of those around him

47. According to the author, a generation is a whole but it is always:

(1) Constant (2) Growing

(3) Homogeneous (4) Heterogeneous

48. According to the passage, customs and traditions originate from:

(1) Conflicts of life (2) Ignorance

(3) The old generation (4) Beliefs

49. One's position is usually different when a person_____.

(1) turns a deaf ear to what others say

(2) pays attention to what people say

(3) proceeds to apply his beliefs in the practical conduct of life

(4) remains ignorant of happenings around him

50. According to the author, the attitude of self-opinionated person in the practical social life should be:

(1) flexible (2) rigid

(3) indifferent (4) proactive

SOLUTIONS

1. (3) From the table we can see that the shop D is the highest selling shop and shop A is the lowest selling shop of books (hard bond and paperback together)

$$\text{Required percentage} = \frac{(5500+6600)-(3500+2000)}{3500+2000}\times 100$$

$$= \frac{6600}{5500}\times 100 = 120\%$$

2. (3) Required ratio = (4400 + 5500) : 6600 = 9900 : 6600 = 3 : 2

3. (2) $\text{Required percentage} = \frac{5500-3500}{5500}\times 100 \approx 36\%$

4. (4) $\text{Required difference} = \frac{5500+6600}{2} - \frac{3500+3900+5500}{3}$

$$= \frac{12100}{2} - \frac{12900}{3} = 6050 - 4300 = 1750$$

5. (1) Required ratio = (3500 + 2000 + 4400 + 5500) : (3900 + 5200 + 5500 + 6600)

= 15400 : 21200 = 77 : 106

6. (4) The correct match is:

A → IV (Educational Technology) Educational Technology refers to a broader planning system that aligns teaching goals with national-level educational needs and policy frameworks.

B→ III (Instructional Technology) Instructional Technology involves tools and strategies for classroom instruction, including localized feedback mechanisms, assessments, and delivery modes.

C → I (Modern Teaching Technology) Team Teaching is a part of modern strategies where collaborative methods like co-teaching, interdisciplinary learning, and use of digital tools are applied.

D → II (Traditional Teaching Technology) Traditional methods assume uniform learning paces – thus, the same task time for all learners, with little personalization.

7. (2) The process of listening follows a structured sequence:

1. **Hearing –** Perceiving sound through the ears.
2. **Understanding –** Comprehending the message.
3. **Remembering –** Retaining the information.
4. **Interpreting –** Analyzing meaning, tone, and context.
5. **Responding –** Giving feedback to the speaker.

Hence, the correct order is: D → E → C → A → B

8. (2) A: Curved surface area of wire = $2\times\frac{22}{7}\times 1\times 35 = 220\ \text{mm}^2$

B: Suryace area of ball $4\times\frac{22}{7}\times(3.5)^2\ 154\ \text{mm}^2$

C: Area of rhombus = $\frac{1}{2}\times 15\times 18 = 135\ \text{mm}^2$

D: Area of circle = $\frac{22}{7}\times\left(\frac{7}{2}\right)^2 = 38.5\text{mm}^2$

$\therefore$ A > B > C > D

9. (4) The constructivist view of education arises from cognitive psychology and focuses on how learners actively construct knowledge through mental processes. It emphasizes that learning is not the passive receipt of information but the active construction of meaning by the learner.

This view is based on the idea that knowledge is built in the mind of the learner through experience, reflection, and interaction with the environment.

Pragmatic – Focuses on practical consequences and real-world application

Idealistic – Related to ideas and ideals

Metacognitive – Refers to thinking about one's own thinking

10. (2) The correct match is :

Term (List-I)		Matched Description (List-II)		Reason
A.	Asiddha	II	Unproven middle term	A term which is not accepted or lacks validation in logic.
B.	Badhita	IV	Inconsistent middle term	A term that contradicts another established premise.
C.	Viruddha	III	Contradictory middle term	A term whose logical implication directly opposes the conclusion.
D.	Savya bhichara	I	Irrelevant middle term	A term used in reasoning that is not relevant to the argument's scope.

11. (1) ARPANET stands for Advanced Research Projects Agency Network. It was developed by ARPA (now DARPA) of the U.S. Department of Defense and is considered the precursor to the modern internet. It was the first network to implement the TCP/IP protocol suite and allowed multiple computers to communicate over a single network.

12. (3) Vyāpti (often translated as "pervasion") is the universal, invariable relation between the reason (hetu) and the probandum (sādhya) in Indian (Nyāya) logic.

13. (3) The correct match is :

B – Identify the premises and the conclusion

You must first know what the argument is saying before you can evaluate it.

C – Test the logical structure (validity)

Check whether the conclusion follows necessarily from the premises—i.e., whether the argument is valid.

A – Determine the truth of the premises: After validity, examine whether each stated premise is actually true in the real world.

D – Determine soundness: An argument is sound only if it is both valid and has all true premises; this final step combines the previous two findings.

14. (4) The communication process cycle typically includes the following key elements:

- Sender – the source of the message
- Message – the content being communicated
- Channel – the medium used (e.g., verbal, written, digital)
- Receiver – the person or group who receives the message
- Feedback – response from the receiver
- Noise – any interference

Time is not a core element of the communication cycle. While it can influence communication (e.g., timing of delivery), it is not part of the basic model.

15. (1) Biogeographic realms are large spatial regions where ecosystems share a broadly similar biological evolutionary history. Here's the correct match:

- **A. Eurasia → II. Palearctic realm**

  The Palearctic realm includes Europe, North Africa, and large parts of Asia (Eurasia).

- **B. South and South East Asia → IV. Oriental realm**

  The Oriental realm includes the Indian subcontinent and Southeast Asia.

- **C. North America → III. Nearctic realm**

  The Nearctic realm covers North America, including Canada and the U.S.

- **D. South America → I. Neotropical realm**

  The Neotropical realm includes South and Central America and the Caribbean.

16. (1) A and D Only

A. This is a myth. Learning a second language generally requires significant time and effort.

B. This is not always true. Bilinguals often experience language dominance or attrition in one language.

C. This is false.It actually takes substantial effort, making the statement incorrect.

D. This is indeed a myth. Maintaining both languages easily is not guaranteed for all bilinguals.

17. (1) The correct match is:

A → IV (Physical Barrier): Geographical distance is a classic physical barrier, especially when the sender is out of sight or far away.

B → III (Psychological Barrier): Personal traits like anxiety, bias, and motivation affect mental reception, hence psychological in nature.

C → II (Linguistic Barrier): Errors in expression, language, and interpretation fall under linguistic or semantic barriers.

D → I (Technical Barrier): Issues with devices (like bad video/audio quality) are technical in nature, affecting the message transmission.

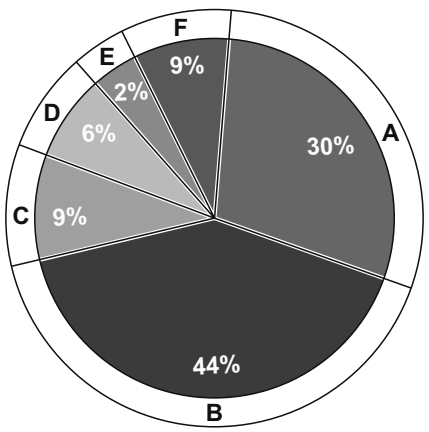
18. (2) The correct statements are A and C only because

- **Statement A** is true as MS Word's older versions use .doc, while newer ones use .docx.
- **Statement B** is generally correct as SQL Server serves databases over local networks, though it can be broader (web/cloud), the question allows this context.

UNIT

2

RESEARCH APTITUDE

SYLLABUS (As Per NTA)			TOPIC WEIGHTAGE (Based on 50 Papers)
	Topic	**No. of Ques.**	**Analysis**
A.	Research: Meaning, Types, and Characteristics, Positivism and Post - Positivistic Approach to Research.	**77**	
B.	Methods of Research: Experimental, Descriptive, Historical, Qualitative and Quantitative Methods.	**111**	
C.	Steps of Research.	**22**	
D.	Thesis and Article writing: Format and Styles of Referencing.	**16**	
E.	Application of ICT in Research.	**5**	
F.	Research Ethics.	**22**	

Research: Meaning, Types, and Characteristics, Positivism and Post-Positivistic Approach to Research

Research is a systematic process aimed at uncovering fresh knowledge and seeking solutions to specific inquiries. The term "research" is derived from "re" (meaning again) and "search" (meaning find), indicating our commitment to revisiting a subject or exploring new information related to it.

According to (Creswell, 2008) - "Research is a systematic investigation to establish the facts."

According to the Cambridge Dictionary online, research is - "A detailed study of a subject, especially in order to discover (new) information or reach a (new) understanding."

According to Cook Research is an acronym of the following that defines its essence.

R = Rational way of thinking

E = Expert and exhaustive treatment

S = Search and solution

E = Exactness

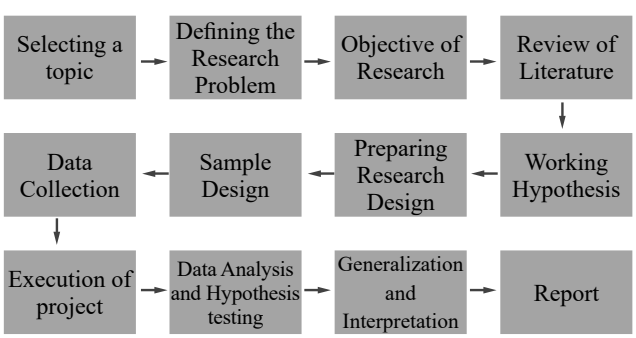
A = Analysis

R = Relationship of facts

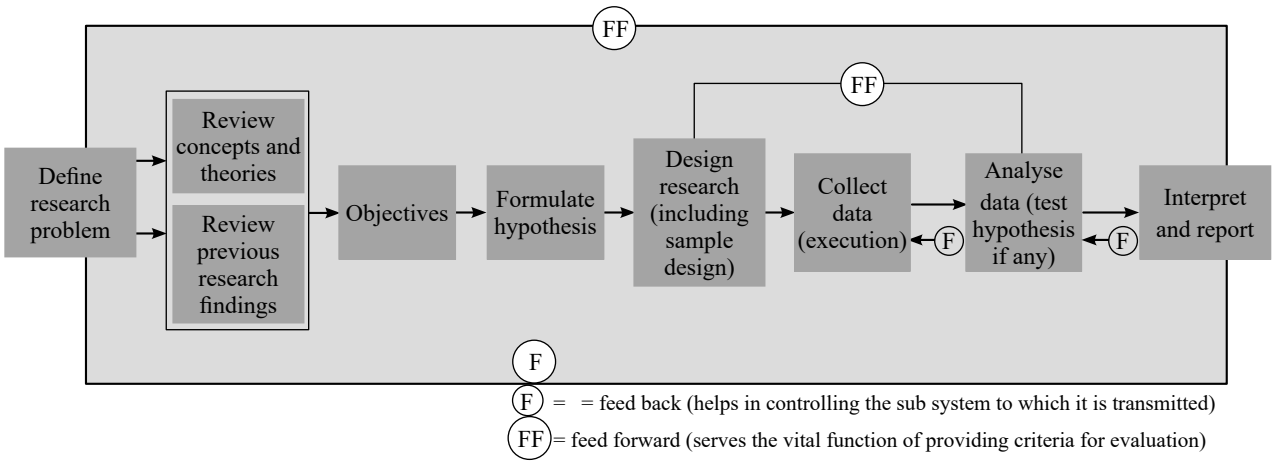
C = Critical observation, careful planning, constructive attitude and condensed generalization.

H = Honesty and hard working

Steps of Research process



Research Process in Flowchart



Aims of Research

1. **Contribute to Knowledge:** Expand understanding in a specific field.
2. **Solve a Problem:** Find solutions to specific issues.
3. **Test a Hypothesis:** Validate or refute theoretical assumptions.
4. **Develop New Theories:** Formulate new concepts or models.
5. **Understand a Phenomenon:** Explore the "why" and "how" behind behaviors or events.
6. **Inform Policy and Practice:** Provide evidence-based recommendations.
7. **Innovate Solutions:** Create new technologies or methods.

Objectives of Research

1. **Review Existing Literature:** Identify gaps and refine research questions.
2. **Collect Data:** Gather evidence through surveys, experiments, or observations.
3. **Analyze Data:** Use statistical or qualitative methods to interpret findings.
4. **Develop Theories:** Create or refine theoretical models based on data.
5. **Draw Conclusions:** Provide insights and make recommendations.
6. **Validate Methods:** Ensure reliability and accuracy of research tools.
7. **Communicate Findings:** Share results through publications and presentations.

Research Design

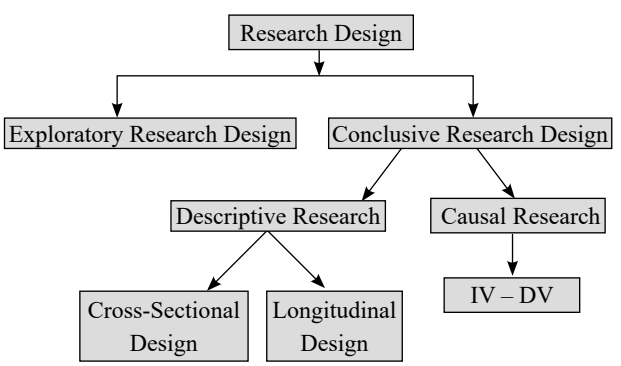
Research design refers to the overall strategy and structure of a research study that defines how to collect, measure, and analyze data. It serves as a blueprint that outlines the procedures and methods to be used to ensure the research is systematic, valid, and reliable. The choice of research design is influenced by the research question, objectives, and the nature of the study.

"A Research Design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure." **–Selltz**

"A Research Design is a master plan methods and master plan specifying the procedures for collecting and analysis the needed information." **–William Zikmund**

The planned sequence of the entire process involved in conducting a research study. **–Prof. Miller**

"The design results from controlling a scientific model into varied a procedure. **–Prof. Young**.



Research Design Types

Design Type	Purpose	Features	Methods	Example
Descriptive	To describe characteristics or phenomena.	Focuses on "what is"; does not test hypotheses.	Surveys, case studies, observational studies.	Describing the prevalence of diabetes in a population.
Exploratory	To explore new areas and generate hypotheses.	Open-ended, flexible, often preliminary.	Literature reviews, interviews, focus groups.	Exploring attitudes towards a new product.
Explanatory (Causal)	To determine cause-and-effect relationships.	Tests hypotheses, involves variable manipulation.	Experiments, quasi-experiments.	Testing the impact of a new teaching method on grades.

Correlational	To examine relationships between variables.	Identifies associations, does not establish causality.	Surveys, secondary data analysis.	Studying the link between exercise and mental health.
Experimental	To establish causality under controlled conditions.	Random assignment, control of extraneous variables.	Randomized controlled trials, laboratory experiments.	Clinical trial testing a new medication.
Quasi-Experimental	To infer causality when randomization isn't feasible.	No random assignment, still attempts causal inference.	Pre-post studies, time series analysis.	Assessing a new policy's effect without random assignment.
Longitudinal	To study changes over time.	Repeated observations of the same variables.	Cohort studies, panel studies.	Following a cohort's health outcomes over several decades.
Cross-Sectional	To provide a snapshot at a single point in time.	Data collected at one time, useful for prevalence studies.	Surveys, observational studies.	Survey on consumer preferences conducted once.

Study design based on the reference period

It refers to how research is structured concerning the time frame during which data is collected and analyzed. This classification is important because the choice of reference period affects the type of data collected, the nature of analysis, and the conclusions that can be drawn. The primary study designs based on reference periods are **cross-sectional, longitudinal,** and **retrospective**.

Note : A reference period is the time period for which statistical results are collected or calculated and to which, as a result, these values refer. The time period may be either a calendar year (reference year), a fiscal year, a semester, a quarter, a month and even a day.

Design types based on reference period

Study Design	Definition	Purpose	Features	Example
Cross-Sectional	Data collection at a single point in time.	To assess prevalence or characteristics of a phenomenon.	Provides a snapshot; cannot determine causality.	Surveying a population's smoking rates at one point in time.
Longitudinal	Repeated data collection from the same subjects over time.	To observe changes and developments over time.	Tracks changes over time; can determine sequences and causality.	Following children's development from infancy to adolescence to study cognitive development.
Retrospective	Analysis of existing records or data from the past.	To study outcomes or patterns from historical data.	Uses past data; less costly but depends on data quality.	Reviewing patient records to study the relationship between smoking and lung cancer.
Prospective	Planned study that follows participants into the future.	To study future outcomes based on present factors.	Follows participants forward in time; can establish causality.	Following a cohort of workers exposed to asbestos to study the development of respiratory diseases.

3Rs, Repeatability, Reproducibility, and Replicability

In research, particularly in scientific and experimental studies, the concepts of **repeatability, reproducibility,** and **replicability** are critical for validating results, ensuring reliability, and building trust in findings. These concepts, often collectively referred to as the "three R's of research validity," help differentiate between different types of confirmation of scientific results.

Concept	Definition	Purpose	Characteristics	Example
Repeatability	Consistency of results when the same researcher repeats an experiment under identical conditions.	Ensures that results are consistent and reliable within the same laboratory or team.	Same lab, same team, same conditions, and equipment.	A chemist repeats a titration multiple times using the same solution and equipment to ensure consistent results.
Reproducibility	Consistency of results when different researchers or labs replicate the experiment using the same method.	Verifies that results are not unique to a single researcher or lab and that the experiment is robust.	Different labs, possibly different equipment, but same methods and procedures.	Multiple labs replicate a study on a new cancer treatment using the same protocol to confirm its effectiveness.
Replicability	Consistency of results when the study is conducted with different methods, settings, or data.	Confirms that findings are generalizable and not limited to specific conditions or data sets.	Different methods, data, or conditions; tests generalizability and validity.	A study on the effect of mindfulness on stress is conducted in a different cultural setting to see if results are similar.

Scales of Measurement

Refer to the different ways in which variables or data can be categorized, quantified, and interpreted in research. Understanding these scales is crucial for selecting appropriate statistical methods and for accurate data analysis. The four primary scales of measurement are **nominal, ordinal, interval,** and **ratio**.

1. **Nominal Scale**
   - **Definition:** The nominal scale is the simplest level of measurement, used to categorize data without any order or hierarchy. It assigns names or labels to different categories.
   - **Characteristics:**
     - Categories are mutually exclusive and exhaustive.
     - No inherent order or ranking between categories.
     - Only allows for counting and frequency analysis.
   - **Examples:**
     - Gender (Male, Female)
     - Marital Status (Single, Married, Divorced)
     - Types of Pets (Dog, Cat, Bird)
2. **Ordinal Scale**
   - **Definition:** The ordinal scale categorizes data into ordered levels or ranks but does not quantify the difference between them. It provides information about relative positioning but not about the magnitude of differences.
   - **Characteristics:**
     - Data can be ranked or ordered.
     - The intervals between ranks are not equal or defined.
     - Suitable for non-parametric statistical tests.
   - **Examples:**
     - Education Level (High School, Bachelor's, Master's, PhD)
     - Customer Satisfaction (Very Unsatisfied, Unsatisfied, Neutral, Satisfied, Very Satisfied)
     - Socioeconomic Status (Low, Middle, High)
3. **Interval Scale**
   - **Definition:** The interval scale measures data on a scale with equal intervals between values, but it lacks a true zero point. This allows for the calculation of the difference between values but not for meaningful ratios.
   - **Characteristics:**
     - Equal intervals between scale points.
     - No true zero point; zero does not indicate the absence of the property.
     - Allows for addition and subtraction but not multiplication or division.
   - **Examples:**
     - Temperature in Celsius or Fahrenheit (e.g., 10°C, 20°C)
     - IQ Scores (e.g., 90, 100, 110)
     - Calendar Years (e.g., 1990, 2000, 2010)
4. **Ratio Scale**
   - **Definition:** The ratio scale is the most informative scale, with all the properties of the interval scale and a true zero point, allowing for the measurement of absolute quantities and the calculation of ratios.
   - **Characteristics:**
     - Equal intervals between scale points and a meaningful zero.
     - Allows for all arithmetic operations, including multiplication and division.
     - Provides the most detailed and informative level of measurement.
   - **Examples:**
     - Height (e.g., 150 cm, 160 cm)
     - Weight (e.g., 50 kg, 70 kg)
     - Age (e.g., 20 years, 30 years)
     - Income (e.g., $30,000, $50,000)

Validity

Validity refers to the extent to which a research study, test, or measurement accurately reflects or assesses the specific concept, variable, or outcome it is intended to measure. It is a crucial aspect of research and testing, ensuring that the conclusions drawn from the data are sound and applicable.

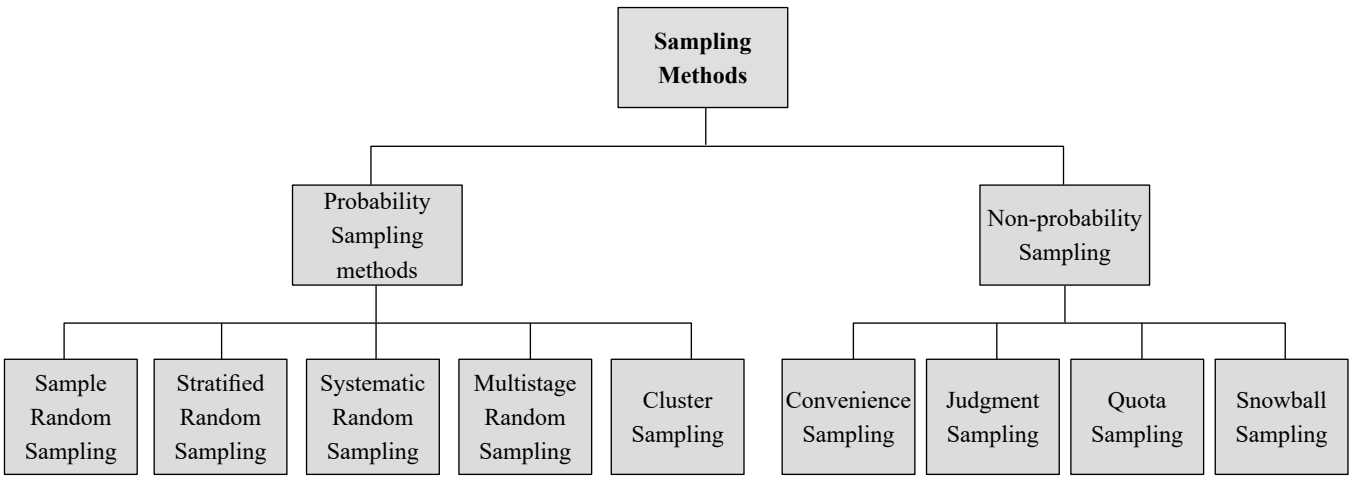
Types of Validity

Type of Validity	Definition	Purpose	Example
Construct Validity	Measures the extent to which a test measures the intended construct.	Ensures accurate measurement of theoretical concepts.	A depression scale should measure depression and not unrelated traits.
Content Validity	Assesses whether a test covers all aspects of the construct.	Ensures comprehensive coverage of the construct.	A language proficiency test should include reading, writing, speaking, and listening components.
Criterion-Related Validity	Measures how well a test correlates with an external criterion.	Assesses predictive or concurrent outcomes.	A job aptitude test should predict job performance accurately.
Face Validity	Reflects the superficial appearance of measuring the intended construct.	Ensures test appears relevant and acceptable to participants.	A customer satisfaction survey with questions directly related to service experience.
Internal Validity	Assesses whether the study results are due to the independent variable.	Ensures causality in experimental studies.	A controlled study that isolates the effect of a new drug on blood pressure.
External Validity	Measures the extent to which study results can be generalized.	Ensures applicability of results to broader contexts.	A behavioral intervention study that can be generalized to different populations or settings.

Sampling

Sampling is the process of selecting a subset of individuals, units, or observations from a larger population to make inferences about the entire population. It is a crucial step in research, as it allows researchers to draw conclusions without needing to study every individual in the population, saving time and resources. The goal of sampling is to obtain a representative subset that accurately reflects the characteristics of the entire population.

Methods of Sampling



Types of Sampling

Sampling Method	Type	Definition	Purpose	Example
Simple Random Sampling	Probability	Every member has an equal chance of being selected.	To provide a representative sample of the population.	Randomly selecting 50 students from a school roster
Stratified Sampling	Probability	Divides the population into subgroups and samples from each subgroup.	Ensures representation from all subgroups.	Randomly selecting individuals from different income brackets.
Systematic Sampling	Probability	Selects every nth member from a list.	To simplify the sampling process.	Choosing every 5th visitor to a website for a survey.
Cluster Sampling	Probability	Divides the population into clusters and randomly selects entire clusters.	Cost-effective for large, dispersed populations.	Surveying all residents in selected neighborhoods.
Multistage Sampling	Probability	Combines several sampling methods, often in stages.	Provides flexibility and cost savings.	Randomly selecting schools, then randomly selecting students within those schools.
Convenience Sampling	Non-Probability	Selects individuals who are easiest to access.	Quick and inexpensive sampling.	Surveying people at a local coffee shop.
Purposive Sampling	Non-Probability	Selects individuals based on specific criteria or judgment.	Focused on specific criteria or characteristics.	Choosing experts in a field for an in-depth study.
Snowball Sampling	Non-Probability	Participants recruit others from their network.	Useful for hard-to- reach populations.	Studying a network of drug users by referrals.
Quota Sampling	Non-Probability	Ensures representation by setting quotas for subgroups.	Ensures representation without random selection.	Ensuring equal numbers of males and females in a study
Voluntary Sampling	Non-Probability	Participants self- select to join the study.	Relies on voluntary participation.	Conducting an online survey where respondents choose to participate.

Research Types

Research can be categorized into the following major domains.

1. Application of research study
2. Objectives in undertaking the research
3. Inquire mode employed in research
4. Other modes of research

1. Classification Based on Application

(i) Basic Research, also known as **Pure** or **Fundamental Research**, is a type of scientific investigation that seeks to expand knowledge and understanding of fundamental principles without a direct application in mind. Unlike applied research, which aims to solve specific, practical problems, basic research is more exploratory and theoretical in nature. It focuses on understanding underlying phenomena, processes, and mechanisms that govern various aspects of the natural world, society, and human behavior. It is organized through different procedures of research like sampling, sampling, hypothesizing facts, etc. The knowledge produced through pure research is sought in order to add to the existing body of research methods.

Key Features of Basic Research:

Aspect	Details
Purpose	To generate new knowledge and theoretical understanding of fundamental aspects of phenomena.
Nature	Exploratory and theoretical; often involves formulating and testing hypotheses without immediate practical applications.
Approach	Systematic and methodical, involving rigorous experimentation, observation, and analysis.
Outcomes	Produces new theories, principles, models, or frameworks; contributes to the scientific body of knowledge.
Examples	Research in quantum mechanics, studies on genetic coding, investigation of cognitive processes, and foundational work in mathematics.
Fields of Application	Conducted across various disciplines including physics, chemistry, biology, psychology, economics, sociology, and mathematics.
Funding	Often funded by government agencies, academic institutions, and scientific organizations; less likely to attract private or commercial funding due to lack of immediate applicability.
Ethical Considerations	Focuses on ethical standards for conducting experiments and research, ensuring integrity, transparency, and objectivity.

(ii) Applied/Decisional Research: Applied research is done based on pure or fundamental research to solve specific, practical questions for policy formulation, administration and understanding of a phenomenon.

Applied Research is a type of scientific investigation that aims to solve specific, practical problems using scientific methods. Unlike basic research, which focuses on generating fundamental knowledge without immediate application, applied research is directly concerned with applying knowledge to real-world situations. It bridges the gap between theory and practice by taking insights from basic research and using them to develop solutions for specific issues or challenges in various fields.

Key Features of Applied Research:

Aspect	Details
Purpose	To solve specific, practical problems or to develop new technologies, processes, or products.
Nature	Goal-oriented and problem-solving; focuses on finding immediate, practical applications for scientific knowledge.
Approach	Uses empirical methods, experimentation, and observations; often involves fieldwork and real-world testing.
Outcomes	Produces tangible outcomes such as new technologies, products, processes, or policies; offers practical solutions to specific problems.
Examples	Developing new medical treatments, creating more efficient manufacturing processes, designing educational interventions, or improving public health strategies.
Fields of Application	Used across various disciplines, including medicine, engineering, education, agriculture, psychology, business, and environmental science.
Funding	Often funded by government agencies, private industry, or organizations with a vested interest in the specific problem being addressed.
Ethical Considerations	Must adhere to ethical guidelines, especially when involving human or animal subjects; focuses on minimizing risks and maximizing benefits.

2. Classification Based on Objectives

(i) Descriptive Research: It is a type of research that aims to accurately and systematically describe a phenomenon, population, or situation. Unlike exploratory or experimental research, descriptive research is not concerned with determining cause-and-effect relationships but focuses on providing a comprehensive and detailed snapshot of a subject or context as it exists. It is often used as a precursor to other types of research, setting the foundation for more in-depth studies.

Key Features of Descriptive Research:

Aspect	Details
Purpose	To provide an accurate description of characteristics, functions, or phenomena within a specific context or population.
Nature	Observational and non-experimental; does not manipulate variables but instead measures and describes them.
Outcome	Generates detailed, factual information about the subject of study; creates a foundation for further research.
Approach	Involves gathering data through methods such as surveys, observations, case studies, and archival research.

Previous Year's Practice Questions

Research: Meaning, Types, and Characteristics, Positivism and Post - Positivistic Approach to Research

1. Which among the following is NOT a type of Longitudinal Research? **[20 June 2023 (M)]**

(1) Cross-sectional study (2) Trend study
(3) Prospective study (4) Cohort study

2. Identify the advantages of open ended questions in survey research. **[16 June 2023 (E)]**

A. Respondents can answer in their own terms
B. They can be quickly administered by the interviewers
C. They allow unusual responses to be derived

Choose the correct answer from the options given below:

(1) A and B only (2) B and C only
(3) A and C only (4) A, B and C

3. Scientific research is **[16 June 2023 (E)]**

A. Data driven B. Replicable
C. Verifiable D. Subjective

Choose the most appropriate answer from the options given below:

(1) A, B and C only (2) B, C and D only
(3) B and D only (4) A, B. C and D

4. Given below are two statements: **[15 June 2023 (M)]**

Statement-I: Content analysis is an approach to the analysis of documents and texts that seeks to analyze them in qualitative terms.

Statement-II: Content analysis is a very transparent research method.

In the light of the above statements, choose the correct answer from the options given below:

(1) Both Statement-I and Statement-II are true
(2) Both Statement-I and Statement-II are false
(3) Statement-I is true but Statement-II is false
(4) Statement-I is false but Statement-II is true

5. Which aspect of the researcher may cause psychosocial effect in the participant of a study? **[13 June 2023 (M)]**

(1) Age (2) Race
(3) Sex (4) Attitude

6. Which among the following is NOT a characteristic of the closed ended questions in survey research? **[14 June 2023 (E)]**

(1) They allow unusual responses that the survey researcher may not have contemplated.
(2) They are easy for interviewers and/or respondents to complete.
(3) They reduce the possibility of variability in the recording of answers.
(4) There is loss of spontaneity in respondents answers.

7. The question of whether the results of a study can be generalized beyond the specific research context, relates to **[14 June 2023 (E)]**

(1) Measurement validity (2) Internal validity
(3) External validity (4) Ecological validity

8. Arrange the following steps pertaining to quantitative research in correct order: **[14 June 2023 (E)]**

A. Analyse data B. Hypothesis
C. Process data D. Findings
E. Research Design

Choose the correct answer from the options given below:

(1) B, C, D, E, A (2) B, E, C, A, D
(3) C, D, A, B, E (4) E, B, C, A, D

9. Survey research is one of the key methods in **[1 March 2023 (M)]**

(1) Physics (2) History
(3) Sociology (4) Hermeneutics

10. Methods of social research are directly linked to different visions of **[1 March 2023 (M)]**

(1) Social reality (2) Laboratory experiments
(3) Simulations (4) Virtual reality

11. Grand theories of social sciences operate at a **[1 March 2023 (M)]**

(1) Lower level (2) Simplistic level
(3) Categorical level (4) Higher level of abstraction

12. Which of the following are considered major types of qualitative research questions? **[1 March 2023 (M)]**

A. Non-purposive B. Causes and consequences
C. Predictive D. Evaluative
E. Descriptive

(1) A, B and C only (2) A, C and D only
(3) A, D and E only (4) B, C, D and E only

13. If research is done to find out behaviours and attitudes by analysing existing records and other materials, it is known as **[2 March 2023 (E)]**

(1) Past research
(2) Non-observational research
(3) Non-participant research
(4) Archinal research

14. **Statement-I:** survey research has the advantage of sampling a large number of respondents who are selected for research. themselves. **[2 March 2023 (E)]**

Statement-II: Researchers, to administer their own surveys, do not have many options except to do it.

Previous Sessions Covered

- Jan-June 2025 Session - 6 Papers
- Aug-Sep 2024 Session - 5 Papers
- June 2024 Session - 2 Papers
- December 2023 Session - 6 Papers
- June 2023 Session - 7 Papers
- December 2022 Session (Held in March 2023) - 5 Papers
- Merged Session of June 2022 & Dec 2021 (Held in July-Oct 2022) - 5 Papers
- Marged Session of Dec 2020 & June 2021 (Held in Nov-Dec 2021) - 7 Papers
- Session of June 2020 (Held in Oct-Nov 2020) - 6 Papers
- Dec 2019 Session - 3 Papers
- June 2019 Session - 3 Papers
- Dec 2018 Session - 1 Paper
- July 2018 Session - 1 Paper
- Nov 2017 Session - 1 Paper
- Jan 2017 Session - 1 Paper
- Aug 2016 Session - 1 Paper
- July 2016 Session - 1 Paper
- Dec 2015 Session - 1 Paper
- June 2015 Session - 1 Paper
- Dec 2014 Session - 1 Paper
- Dec 2013 Session - 1 Paper
- Dec 2012 Session - 1 Paper
- June 2011 Session - 1 Paper
- June 2010 Session - 1 Paper
- Dec 2009 Session - 1 Paper

KEY FEATURES

- ✓ **Latest Pattern Practice:** Prepare for the latest exam format by studying 54 shift papers from the last 11 sessions since June 2019 along with 14 Papers between 2009-2018, ensuring you're familiar with the latest trends and patterns in the exam.
- ✓ **Verified Solutions:** Access detailed and verified solutions for each question, aiding in your understanding of concepts and helping you learn from your mistakes effectively.
- ✓ **Updated Content:** Stay abreast of the latest developments in ICT, environmental studies, and policy changes relevant to your exam, ensuring your knowledge is up-to-date and aligned with current trends.
- ✓ **Clear Presentation:** Easily grasp complex concepts through clear and understandable theory presented alongside tables and graphs, facilitating comprehension and retention of key information.
- ✓ **Weightage Guidance:** Identify the importance of each topic within the syllabus, enabling you to prioritize your study efforts effectively and focus on areas with higher weightage for better exam preparation.

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