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Institute of Teaching and Research in Ayurveda

Ph.D. Entrance Examination - 2025

(3rd May 2025)

Paper - I

Subject

Research Methodology & Medical Statistics



Question Booklet Code

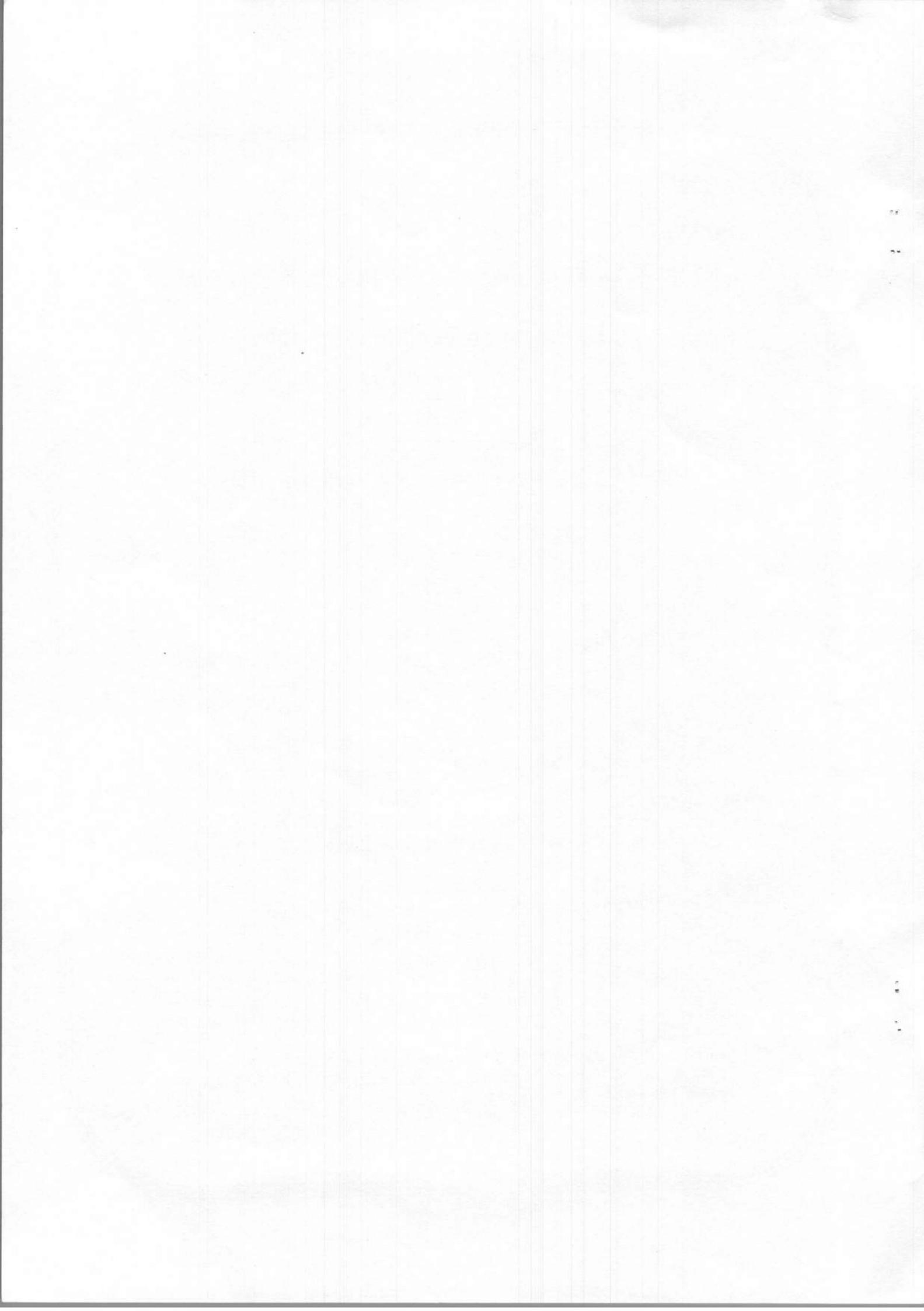
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For admission in
Ayurvidyavaridhi (Ph.D.-Ayurveda)

Conducted by:
Institute of Teaching and Research in Ayurveda
Jamnagar - 361008
Gujarat, India

Note:

1. Candidates are instructed to **NOT TO OPEN** the question booklet till said to do so.
2. Candidates are advised to read the instructions provided at last page of this question booklet carefully, before answering the questions.



Research Methodology

1. What is the correct relationship between power and Type II error?

| | |
|-------------------------|--------------------------|
| (A) Power = α | (B) Power = $1 - \alpha$ |
| (C) Power = $1 - \beta$ | (D) Power = β |
2. Which of the following is a non-parametric test for comparing medians of two independent samples?

| | |
|-------------------------|-------------------------|
| (A) Student's t-test | (B) Fisher's exact test |
| (C) Mann-Whitney U test | (D) Paired t-test |
3. Which research scheme has been initiated by Central Council for Research in Ayurvedic Sciences (CCRAS) for Ayurveda Post Graduate Scholars pursuing their MD/MS(Ayu) courses?

| | |
|--------------|--------------|
| (A) PG-SPARK | (B) PG-STAR |
| (C) PG-SHARK | (D) PG-ATPAR |
4. The Kaplan-Meier estimator is used to _____

| | |
|--------------------------------------|--------------------------------|
| (A) Compare means between two groups | (B) Estimate survival function |
| (C) Model binary outcomes | (D) Compute odds ratio |
5. When is Fisher's exact test preferred over the Chi-square test?

| | |
|-------------------------------|--|
| (A) When sample size is large | (B) When expected frequencies are small (<5) |
| (C) For paired data | (D) For continuous outcomes |
6. A 95% confidence interval for a mean implies _____

| | |
|--|--|
| (A) The mean falls within this range 95% of the time | (B) There is a 95% chance that the population mean lies within the interval |
| (C) 95% of all data points fall in this range | (D) If the study was repeated many times, 95% of the intervals would contain the true mean |
7. Which test is used to compare the means of two independent samples?

| | |
|----------------------|-------------------|
| (A) Chi-square test | (B) Paired t-test |
| (C) Student's t-test | (D) ANOVA |
8. What is mode?

| | |
|---|-------------------------------------|
| (A) The average of given data | (B) The highest value of given data |
| (C) The value that appears most often in given data | (D) The middle value of given data |
9. Which measure of central tendency is best for skewed data?

| | |
|----------|------------------------|
| (A) Mean | (B) Median |
| (C) Mode | (D) Standard deviation |
10. What is the standard deviation?

| | |
|--|---|
| (A) The difference between the highest and lowest values | (B) Measure of how spread out the data is |
| (C) Type of average | (D) Type of central tendency |

Research Methodology

11. What is the null hypothesis?
(A) There is an effect or difference (B) The study has no data
(C) There is no effect or difference (D) The test is significant

12. Which scale is used for categorical data like gender?
(A) Ratio (B) Ordinal
(C) Nominal (D) Interval

13. Under what circumstances is ANOVA (Analysis of Variance) typically used in statistical analysis?
(A) To compare two groups (B) To compare means of more than two groups
(C) To check proportions (D) To measure correlation

14. What does a correlation coefficient (r) measure?
(A) Causation (B) Mean difference
(C) Strength and direction of relationship (D) Variance

15. What is the function of a box plot?
(A) Shows mean and standard deviation (B) Compare proportions
(C) Display median, quartiles, and outliers (D) Frequency distribution of a continuous variable

16. Which of the following is a core function of the Ayush Grid?
(A) Conducting pharmaceutical trials for Ayush drugs (B) Creating a digital platform to manage Ayush education, research, and healthcare delivery
(C) Replacing existing electronic health record (EHR) systems across India (D) Privatizing traditional medicine systems under PPP model

17. What is the AYURGYAN scheme approved by the Ministry of Ayush?
(A) A financial assistance program for Ayush practitioners (B) A scholarship program for students pursuing Ayush courses
(C) A scheme to promote education and research in the field of Ayush (D) A health insurance scheme for Ayush treatments

18. Which of the following experimental pharmacology model is primarily used to study the analgesic effect of drugs?
(A) Tail-flick test (B) Forced swim test
(C) Open field test (D) Elevated plus maze

Research Methodology

19. What is true about institutional ethics committee?

 - i. It shall have a minimum of seven members
 - ii. Chairperson must be from outside of organisation
 - iii. Presence of lay person in IEC meeting is not mandatory
 - iv. Member Secretary shall be affiliated to the institute

(A) i, ii and iv (B) ii, iii and iv
(C) i, ii and iii (D) i, iii and iv

20. Considering following statements on Phase-I clinical trial, choose the right option.

Statement I- It should usually be carried out by investigators trained in clinical pharmacology

Statement II- At least 2 subjects should be used on each dose

(A) Only statement I is true (B) Only statement II is true
(C) None of both statements is true (D) Both statements are true

21. _____ is an Addendum to ICMR National Ethical Guidelines for Biomedical and Health Research Involving Human Participants, 2017, in March 2025 that encourages the scientific community to explore Integrative Medicine with greater credibility and confidence.

(A) Confidentiality statement in Clinical trials on integrative systems of medicine (B) Ethical requirements for Integrative Medicine research
(C) Ayush Medicine research requirements (D) Case Record Form in Integrative medicine research

22. _____ is an open-access repository of electronic preprints (e-prints)

(A) IEEE Xplore (B) SpringerLink
(C) arXiv (D) Cochrane Library

23. When the expected effect size in a clinical trial is small, the required sample size will be _____

(A) Decreased significantly (B) Remain unchanged
(C) Increased significantly (D) Have no relation with it

24. What type of study is most appropriate for assessing the prevalence of a condition in a population at a specific time point?

(A) Cohort study (B) Cross-sectional study
(C) Case-control study (D) Longitudinal study

25. Recall bias is more likely to occur in _____

(A) Case-control study (B) Prospective cohort study
(C) Randomized controlled trials (D) Cross-sectional study

26. Any untoward medical occurrence in a patient which does not necessarily have a causal relationship with this treatment, is known as _____

(A) Adverse Drug Reaction (B) Adverse Event
(C) Adverse Drug Response (D) Adverse Drug Effect

Research Methodology

Research Methodology

34. _____ study involve conducting experiments or research outside of a living organism, typically in a laboratory setting.

- (A) *In-vivo* (B) Computational biology
(C) System Biology (D) *In-vitro*

35. PICOT framework comprises of _____

- (A) Patient, Intervention, Control, Observation, Timeframe (B) Population, Interest, Comparator, Outcomes, Timeframe
(C) Patient, Intervention, Control, Outcomes, Testing (D) Population, Intervention, Comparator, Outcomes, Timeframe

36. Which among these effect measures incorporates a time dimension?

- (A) Risk Ratio (B) Odds Ratio
(C) Relative Risk (D) Risk Rate

37. _____ is calculated by dividing the number of current year citations to the source items published in that journal during the previous two years.

- (A) Impact Factor (B) Cite Score
(C) Citation Index (D) H-index

38. What does the IMRaD structure in scientific writing stand for?

- (A) Introduction, Manuscript, Results, and Discussion (B) Introduction, Methods, Results, and Discussion
(C) Ideas, Methods, Reasoning, and Discussion (D) Introduction, Methods, References, and Discussion

39. What is plagiarism in scientific writing?

- (A) Summarizing someone else's ideas in your own words with citation (B) Reusing one's own published text with citation
(C) Copying others' work or ideas without proper attribution (D) Using technical jargon in a research paper

40. What is open access publishing?

- (A) Expediting peer review process (B) Publishing in any available journal
(C) Making research freely available to the public (D) Publishing without copyright

41. Which of the following tools is commonly used to detect plagiarism in scientific writing?

- (A) Covidence (B) Turnitin
(C) Ethernet (D) EndNote

42. Which of the following is an example of a predatory journal?

- (A) A journal with a rigorous peer-review process and high impact factor.
(B) A journal that publishes articles without proper peer review.
(C) A journal that is indexed in reputable databases like PubMed and Scopus.
(D) A journal that provides open access to all its articles without any fees.

43. Which of the following is a multidisciplinary research database (including science, technology, medicine, social sciences, and arts and humanities) that indexes scholarly literature, including journal articles and conference papers?
- (A) PubMed (B) arXiv
(C) Scopus (D) PsycINFO
44. Ayush Research Portal is developed by _____ under the Ministry of Ayush.
- (A) All India Institute of Ayurveda (B) Central Council for Research in Ayurvedic Sciences
(C) Institute of Teaching and Research in Ayurveda (D) Rashtriya Ayurveda Vidyapeeth
45. What type of documents are primarily provided by Cochrane Library?
- (A) Statistical data sets (B) Technical standards
(C) Systematic reviews and controlled trials (D) Patents and technical disclosures
46. A crossover trial is most appropriate when _____
- 1) Condition is acute and non-stable
2) Treatment effects are likely to be carryover effect
3) Treatment effects are likely to be reversible and short-lived
4) Condition is chronic or relatively stable
- (A) 1 and 2 (B) 3 and 4
(C) 1 and 3 (D) 2 and 4
47. A reservoir of Indian Theses is _____
- (A) ShodhaGanga (B) ShodhaSaraswati
(C) ShodhaShuddhi (D) ShodhaSindhu
48. In pragmatic trial, the goal is to _____
- (A) Maximize internal validity (B) Minimize external validity
(C) Determine treatment efficacy (D) Assess effectiveness in real-world settings under ideal conditions
49. Which method is used to reduce selection bias in Randomized Controlled Trials?
- (A) Stratification (B) Blinding
(C) Randomization (D) Placebo control
50. What does a Type I error represent in hypothesis testing?
- (A) Failing to detect a true effect (B) Rejecting the null hypothesis when it is actually true
(C) Accepting the null hypothesis when it is false (D) Using the wrong statistical test

rough work

GENERAL INSTRUCTIONS

Ph.D. Entrance Exam 2025

Institute of Teaching and Research in Ayurveda

Jamnagar, Gujarat – 361008

1. The written Test for 100 marks is consists of MCQs of one mark each.
2. There will be 1/4th negative marking for incorrect answer.
3. The duration of the entrance test is 90 minutes i.e. 09.30 AM to 11.00 AM
4. The candidates are instructed to fill their Roll no. in the respective columns of OMR sheet and on Question booklet carefully.
5. Candidates are advised to use **black ball pen** for filling the information columns and marking answers.
6. Correct Method for marking answers is A B C D
7. After opening the question booklet; the candidate are instructed to confirm 1 to 50 MCQs in each booklet in a sequence. Any discrepancies in this regard should immediately be reported to the Room Supervisor / Examination Center Superintendent.
8. Candidates will not be allowed with Books, Notes, Bags, Mobiles, Pagers or any other type of electronic device inside the examination center.
9. Don't mark or write anything on the question booklet except on the page given for rough work.
10. If there is any ambiguity against the question, it should be submitted to the Examination Center Superintendent before 05:00 pm on the day of examination (3rd May, 2025); **after that no such complaint will be entertained.**
11. Answer Key, Result and Merit will be displayed on <https://itra.ac.in>. No separate mark sheets or call letter for interview will be posted.
12. Decision of 'Ph.D. Admission Committee' will be final in any discrepancy.