Roll No. .....

Question Booklet Number

O. M. R. Serial No.

M. Sc. (Biotechnology) (Fourth Semester)
(NEP) EXAMINATION, 2025-26
RESEARCH METHODOLOGY

Paper Code							
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Questions Booklet Series
B

Time : 1:30 Hours] [*Maximum Marks : 75*

Instructions to the Examinee :

1. Do not open the booklet unless you are asked to do so.

2. The booklet contains 100 questions. Examinee is required to answer 75 questions in the OMR Answer-Sheet provided and not in the question booklet. All questions carry equal marks.

3. Examine the Booklet and the OMR Answer-Sheet very carefully before you proceed. Faulty question booklet due to missing or duplicate pages/questions or having any other discrepancy should be got immediately replaced.

परीक्षार्थियों के लिए निर्देश :

1. प्रश्न-पुस्तिका को तब तक न खोलें जब तक आपसे कहा न जाए।

2. प्रश्न-पुस्तिका में 100 प्रश्न हैं। परीक्षार्थी को 75 प्रश्नों को केवल दी गई OMR आन्सर-शीट पर ही हल करना है, प्रश्न-पुस्तिका पर नहीं। सभी प्रश्नों के अंक समान हैं।

3. प्रश्नों के उत्तर अंकित करने से पूर्व प्रश्न-पुस्तिका तथा OMR आन्सर-शीट को सावधानीपूर्वक देख लें। दोषपूर्ण प्रश्न-पुस्तिका जिसमें कुछ भाग छपने से छूट गए हों या प्रश्न एक से अधिक बार छप गए हों या उसमें किसी अन्य प्रकार की कमी हो, तो उसे तुरन्त बदल लें।

(Remaining instructions on the last page) **(शेष निर्देश अन्तिम पृष्ठ पर)**

(Only for Rough Work)

1. Control group is used to :

(A) Increase data

(B) Compare results

(C) Reduce cost

(D) Bias

2. Study without manipulation of variables is :

(A) Experimental

(B) Observational

(C) Analytical

(D) Theoretical

3. Survey method uses :

(A) Experiments

(B) Models

(C) Theory

(D) Questionnaires

4. Cross-sectional study observes :

(A) Over years

(B) Monthly

(C) Daily

(D) One time

5. Evaluation research measures :

(A) Theory

(B) Effectiveness

(C) Hypothesis

(D) Data

6. Assertion (A) : Pilot study reduces errors.

Reason (R) : It tests feasibility.

(A) Both true, R explains A

(B) Both true, R not explanation

(C) A true, R false

(D) A false, R true

7. In-depth analysis of one unit is :

(A) Survey

(B) Case study

(C) Experiment

(D) Model

8. Quantitative research emphasizes :

(A) Description

(B) Concept

(C) Opinion

(D) Measurement

9. Diagnostic research identifies :

(A) Cause

(B) Effect

(C) Data

(D) Theory

10. Lab research ensures :

(A) Natural setting

(B) Bias

(C) Variability

(D) Control

11. Factorial design studies :

(A) One variable

(B) Multiple variables

(C) No variables

(D) Random variables

12. Randomization ensures :

(A) Bias

(B) Equal chance

(C) Error

(D) Cost

13. Assertion (A) : Replication improves precision.

Reason (R) : It reduces random error.

(A) Both true, R explains A

(B) Both true, R not explanation

(C) A true, R false

(D) A false, R true

14. Precision means :

(A) Accuracy

(B) Bias

(C) Repeatability

(D) Error

15. Measurements that vary randomly around true value :

(A) Systematic error

(B) Instrument error

(C) Gross error

(D) Random error

16. Accuracy refers to :

(A) Closeness to true value

(B) Repeatability

(C) Error

(D) Bias

17. Sampling means :

(A) Data collection

(B) Reporting

(C) Analysis

(D) Selecting subset

18. Simple random sampling ensures :

(A) Bias

(B) Equal probability

(C) Error

(D) Control

19. Assertion (A) : Systematic error affects accuracy.

Reason (R) : It is consistent bias.

(A) Both true, R explains A

(B) Both true, R not explanation

(C) A true, R false

(D) A false, R true

20. Stratified sampling divides :

(A) Data

(B) Population

(C) Variables

(D) Results

21. Questionnaire should be :

(A) Complex

(B) Long

(C) Clear

(D) Biased

22. Interview method is :

(A) Indirect

(B) Theoretical

(C) Observational

(D) Direct

23. Data collection includes :

(A) Survey

(B) Observation

(C) Experiment

(D) All of the above

24. Assertion (A) : Good design reduces bias.

Reason (R) : It controls variables.

(A) Both true, R explains A

(B) Both true, R not explanation

(C) A true, R false

(D) A false, R true

25. Record keeping ensures :

(A) Loss

(B) Integrity

(C) Bias

(D) Error

26. Measurement error is :

(A) Exact

(B) Deviation

(C) Constant

(D) Data

27. Tabulation is :

(A) Writing

(B) Arranging data

(C) Graphing

(D) Coding

28. Among various central tendency measures, mean is considered as :

(A) Range

(B) Middle value

(C) Frequent

(D) Average

29. Assertion (A) : Variance measures dispersion.

Reason (R) : It is square of SD.

(A) Both true, R explains A

(B) Both true, R not explanation

(C) A true, R false

(D) A false. R true

30. In research data, median describes :

(A) Average

(B) Range

(C) Mode

(D) Middle value

31. When the data is widely spread, the standard deviation would be :

(A) Low

(B) High

(C) Zero

(D) Negative

32. p-value indicates :

(A) Probability

(B) Mean

(C) Mode

(D) Range

33. Significance level is :

(A) α

(B) β

(C) Mean

(D) SD

34. Type I error indicates :

(A) Correct decision

(B) Accept false hypothesis

(C) Reject true hypothesis

(D) Bias

35. Type II error indicates :

(A) Reject true

(B) Correct

(C) Accept false

(D) Bias

36. Sample represents :

(A) Population

(B) Subset

(C) Data

(D) Entire group

37. Assertion (A) : Graphs simplify data interpretation.

Reason (R) : Visuals enhance understanding.

(A) Both true, R explains A

(B) Both true, R not explanation

(C) A true, R false

(D) A false, R true

38. Hypothesis testing involves :

(A) Graphing

(B) Writing

(C) Decision making

(D) Coding

39. Abstract contains :

(A) Graphs

(B) Data

(C) Tables

(D) Summary

40. Introduction includes :

(A) Graphs

(B) Results

(C) Tables

(D) Background

41. Methodology explains :

(A) Methods

(B) Results

(C) Graphs

(D) Tables

42. Discussion interprets :

(A) Methods

(B) Results

(C) Data

(D) Tables

43. Conclusion of a research study gives :

(A) Findings

(B) Data

(C) Graphs

(D) Tables

44. Very small p-value (< 0.01) indicates :

(A) Strong evidence against null

(B) Weak evidence

(C) No evidence

(D) Random result

45. Which of the following is useful for literature search ?

(A) Pubmed

(B) Google Scholar

(C) Web of Science

(D) All of the above

46. 'Data cooking' in scientific publication means :

(A) Manipulation of data to produce a desired result

(B) Statistical analysis of data

(C) Transforming raw data into polished datasets

(D) Collection of data from primary sources

47. Null hypothesis is rejected if :

(A) When p value is less than significant level

(B) When p value is greater than significant level

(C) When the standard deviation is more

(D) When the standard deviation is zero

48. Null hypothesis is indicated with :

(A) H_0

(B) H_A

(C) H_N

(D) H_1

49. The correct sequence of research project is :

(A) Experimental design – Data generation – Data analysis – Report preparation

(B) Data generation – Data analysis – Experimental design – Report preparation

(C) Report preparation – Experimental design – Data generation – Data analysis

(D) Experimental design – Report preparation – Data generation – Data analysis

50. Which of the following is crucial for executing a research project ?

(A) Funding

(B) Technical Expertise

(C) Infrastructural facilities

(D) All of the above

51. Which of the following best describes scientific research ?

(A) Trial and error

(B) Systematic and objective inquiry

(C) Random experimentation

(D) Philosophical thinking

52. Which feature distinguishes research from general inquiry ?

(A) Curiosity

(B) Use of logic

(C) Systematic methodology

(D) Observation

53. Assertion (A) : Research must be replicable.

Reason (R) : Replication ensures reliability of findings.

(A) Both true, R explains A

(B) Both true, R not explanation

(C) A true, R false

(D) A false, R true

54. Which of the following best represents applied research ?

(A) Studying quantum theory

(B) Developing drought-resistant crops

(C) Exploring galaxy formation

(D) Mathematical modeling

55. A hypothesis should be :

(A) Vague

(B) Non-testable

(C) Testable and falsifiable

(D) Philosophical

56. Which is NOT a research objective ?

(A) Explanation

(B) Prediction

(C) Manipulation without logic

(D) Description

57. Deductive reasoning is best described as :

(A) Data → Theory

(B) Theory → Hypothesis

(C) Observation → Law

(D) Experiment → Observation

58. Which of the following reflects inductive reasoning ?

(A) Law to case

(B) Data to generalization

(C) Theory to testing

(D) Hypothesis to result

59. Assertion (A) : Validity ensures accuracy.

Reason (R) : It measures consistency.

(A) Both true, R explains A

(B) Both true, R not explanation

(C) A true, R false

(D) A false. R true

60. Which of the following is a fundamental motivation for research ?

(A) Promotion

(B) Curiosity

(C) Funding

(D) Recognition

61. Which of the following is an example of empirical research ?

(A) Philosophical argument

(B) Data-based observation

(C) Literature-only study

(D) Conceptual modelling

62. A good research design should be :

(A) Rigid

(B) Undefined

(C) Random

(D) Flexible and appropriate

63. Assertion (A) : Bias reduces research quality.

Reason (R) : Bias affects objectivity.

(A) Both true, R explains A

(B) Both true, R not explanation

(C) A true, R false

(D) A false, R true

64. Reliability is improved by :

(A) Randomization

(B) Replication

(C) Hypothesis

(D) Theory

65. Which is NOT a type of reasoning ?

(A) Deductive

(B) Inductive

(C) Abductive

(D) Subjective

66. A researcher repeatedly measures the same parameter and gets identical values but far from true value. This indicates :

(A) High accuracy, low precision

(B) Low accuracy, high precision

(C) High accuracy, high precision

(D) Low accuracy, low precision

67. Which of the following best describes objectivity ?

(A) Personal belief

(B) Evidence-based conclusion

(C) Emotional reasoning

(D) Opinion

68. Scientific method involves :

(A) Hypothesis testing

(B) Observation

(C) Experimentation

(D) All of the above

69. Which is an extrinsic motivation ?

(A) Curiosity

(B) Knowledge gain

(C) Funding

(D) Discovery

70. Assertion (A) : Research is cyclical.

Reason (R) : Findings lead to new questions.

(A) Both true, R explains A

(B) Both true, R not explanation

(C) A true, R false

(D) A false, R true

71. A well-defined research problem should be :

(A) Broad

(B) Ambiguous

(C) Specific and feasible

(D) Lengthy

72. Literature review primarily helps to :

(A) Increase length

(B) Avoid hypothesis

(C) Delay work

(D) Identify research gaps

73. Primary source example :

(A) Review article

(B) Textbook

(C) Research paper

(D) Blog

74. Assertion (A) : Plagiarism is unethical.

Reason (R) : It involves using others' work without credit.

(A) Both true, R explains A

(B) Both true, R not explanation

(C) A true, R false

(D) A false, R true

75. Boolean operator 'AND' is used to :

(A) Broaden search

(B) Narrow search

(C) Exclude terms

(D) Randomize

76. Research gap refers to :

(A) Published data

(B) Missing knowledge

(C) Hypothesis

(D) Theory

77. What is considered as a secondary source ?

(A) Experimental data

(B) Thesis

(C) Review paper

(D) Raw data

78. A researcher selects a topic beyond available resources. This violates :

(A) Ethics

(B) Feasibility

(C) Validity

(D) Reliability

79. Assertion (A) : Citation avoids plagiarism.

Reason (R) : It acknowledges sources.

(A) Both true, R explains A

(B) Both true, R not explanation

(C) A true, R false

(D) A false, R true

80. Scope of study defines :

(A) Results

(B) Graph

(C) Data

(D) Limits

81. Hypothesis is derived from :

(A) Random guess

(B) Results

(C) Conclusion

(D) Literature review

82. Conceptual framework shows :

(A) Data

(B) Methods

(C) Variable relationships

(D) Results

83. Null hypothesis assumes :

(A) Difference

(B) Relationship

(C) No effect

(D) Strong effect

84. Duplicate study without modification indicates :

(A) Innovation

(B) Replication

(C) Redundancy

(D) Validation

85. Research plan includes :

(A) Timeline

(B) Methods

(C) Budget

(D) All of the above

86. Which improves literature search efficiency ?

(A) Keywords

(B) Random reading

(C) Guessing

(D) Copying

87. Assertion (A) : Review prevents duplication.

Reason (R) : It reveals prior work.

(A) Both true, R explains A

(B) Both true, R not explanation

(C) A true, R false

(D) A false. R true

88. Abstract should be :

(A) Detailed

(B) Long

(C) Concise summary

(D) Technical only

89. Which is NOT part of proposal ?

(A) Objectives

(B) Methodology

(C) Results

(D) Timeline

90. If hypothesis cannot be tested experimentally, it is :

(A) Strong

(B) Weak

(C) Scientific

(D) Valid

91. Fundamental basic research focuses on :

(A) Application

(B) Product

(C) Market

(D) Theory

92. Exploratory research is used when :

(A) Problem is clear

(B) Problem is unknown

(C) Data exists

(D) Hypothesis exists

93. Assertion (A) : Experimental research establishes causality.

Reason (R) : Variables are controlled.

(A) Both true, R explains A

(B) Both true, R not explanation

(C) A true, R false

(D) A false, R true

94. Descriptive research answers :

(A) Why

(B) How

(C) What

(D) When

95. Independent variable is :

(A) Outcome

(B) Cause

(C) Constant

(D) Error

96. Observing plants in natural habitat is :

(A) Lab study

(B) Experimental

(C) Survey

(D) Field study

97. Correlational research majorly studies :

(A) Cause

(B) Effect

(C) Relationship

(D) Theory

98. Qualitative research deals with :

(A) Numbers

(B) Words

(C) Equations

(D) Statistics

99. Assertion (A) : Action research solves real problems.

Reason (R) : It is participatory.

(A) Both true, R explains A

(B) Both true, R not explanation

(C) A true, R false

(D) A false, R true

100. Longitudinal study observes :

(A) One time

(B) Over time

(C) Random

(D) Short period

(Only for Rough Work)

4. Four alternative answers are mentioned for each question as—A, B, C & D in the booklet. The candidate has to choose the correct answer and mark the same in the OMR Answer-Sheet as per the direction :

Example :

Question :

Q. 1 (A) ● (C) (D)
Q. 2 (A) (B) ● (D)
Q. 3 (A) ● (C) (D)

Illegible answers with cutting and over-writing or half filled circle will be cancelled.

5. Each question carries equal marks. Marks will be awarded according to the number of correct answers you have.
6. All answers are to be given on OMR Answer Sheet only. Answers given anywhere other than the place specified in the answer sheet will not be considered valid.
7. Before writing anything on the OMR Answer Sheet, all the instructions given in it should be read carefully.
8. After the completion of the examination candidates should leave the examination hall only after providing their OMR Answer Sheet to the invigilator. Candidate can carry their Question Booklet.
9. There will be no negative marking.
10. Rough work, if any, should be done on the blank pages provided for the purpose in the booklet.
11. To bring and use of log-book, calculator, pager and cellular phone in examination hall is prohibited.
12. In case of any difference found in English and Hindi version of the question, the English version of the question will be held authentic.

Impt. : On opening the question booklet, first check that all the pages of the question booklet are printed properly. If there is any discrepancy in the question Booklet, then after showing it to the invigilator, get another question Booklet of the same series.

4. प्रश्न-पुस्तिका में प्रत्येक प्रश्न के चार सम्भावित उत्तर—A, B, C एवं D हैं। परीक्षार्थी को उन चारों विकल्पों में से सही उत्तर छाँटना है। उत्तर को OMR आन्सर-शीट में सम्बन्धित प्रश्न संख्या में निम्न प्रकार भरना है :

उदाहरण :

प्रश्न :

प्रश्न 1 (A) ● (C) (D)
प्रश्न 2 (A) (B) ● (D)
प्रश्न 3 (A) ● (C) (D)

अपठनीय उत्तर या ऐसे उत्तर जिन्हें काटा या बदला गया है, या गोले में आधा भरकर दिया गया, उन्हें निरस्त कर दिया जाएगा।

5. प्रत्येक प्रश्न के अंक समान हैं। आपके जितने उत्तर सही होंगे, उन्हीं के अनुसार अंक प्रदान किये जायेंगे।
6. सभी उत्तर केवल ओ. एम. आर. उत्तर-पत्रक (OMR Answer Sheet) पर ही दिये जाने हैं। उत्तर-पत्रक में निर्धारित स्थान के अलावा अन्यत्र कहीं पर दिया गया उत्तर मान्य नहीं होगा।
7. ओ. एम. आर. उत्तर-पत्रक (OMR Answer Sheet) पर कुछ भी लिखने से पूर्व उसमें दिये गये सभी अनुदेशों को सावधानीपूर्वक पढ़ लिया जाये।
8. परीक्षा समाप्ति के उपरान्त परीक्षार्थी कक्ष निरीक्षक को अपनी OMR Answer Sheet उपलब्ध कराने के बाद ही परीक्षा कक्ष से प्रस्थान करें। परीक्षार्थी अपने साथ प्रश्न-पुस्तिका ले जा सकते हैं।
9. निगेटिव मार्किंग नहीं है।
10. कोई भी रफ कार्य, प्रश्न-पुस्तिका के अन्त में, रफ-कार्य के लिए दिए खाली पेज पर ही किया जाना चाहिए।
11. परीक्षा-कक्ष में लॉग-बुक, कैलकुलेटर, पेजर तथा सेल्युलर फोन ले जाना तथा उसका उपयोग करना वर्जित है।
12. प्रश्न के हिन्दी एवं अंग्रेजी रूपान्तरण में भिन्नता होने की दशा में प्रश्न का अंग्रेजी रूपान्तरण ही मान्य होगा।

महत्वपूर्ण : प्रश्नपुस्तिका खोलने पर प्रथमतः जाँच कर देख लें कि प्रश्न-पुस्तिका के सभी पृष्ठ भलीभाँति छपे हुए हैं। यदि प्रश्नपुस्तिका में कोई कमी हो, तो कक्षनिरीक्षक को दिखाकर उसी सिरीज की दूसरी प्रश्न-पुस्तिका प्राप्त कर लें।