Reg. No. : ....

Code No. : 5401 **Sub. Code : ZPHM 43**

M.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2024.

Fourth Semester

Physics – Core

RESEARCH METHODOLOGY

(For those who joined in July 2021-2023)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL the questions.

Choose the correct answer :

1. What is the primary goal of explanatory research?

    (a) To describe and summarize data

    (b) To explore new research areas

    (c) To explain the relationships between variables and establish causation

    (d) To collect preliminary data for future research

2. Which type of research is often used to evaluate the effectiveness or impact of a program, policy, or intervention?

    (a) Descriptive research

    (b) Longitudinal research

    (c) Evaluative research

    (d) Cross-sectional research

3. When conducting experimental research, what is the purpose of a control group?

    (a) To ensure that the study is exploratory in nature

    (b) To provide a comparison for the experimental group

    (c) To eliminate the need for data collection

    (d) To determine the research objectives

4. What is the primary data collection method used in observational research?

    (a) Surveys and questionnaires

    (b) Controlled experiments

    (c) Direct observation of subjects in their natural environment

    (d) Case studies

5. In the introduction section, what is the purpose of the literature review?

   (a) To summarize the research findings

   (b) To present the methodology used in the study

   (c) To review and discuss existing research related to the topic

   (d) To list all the references cited in the report

6. When evaluating the methodology section of a research report, what should you look for to assess the research's validity?

   (a) A thorough literature review

   (b) The use of complex statistical methods

   (c) Clear and detailed explanations of research methods and data collection

   (d) A long list of references

7. Which of the following types of data is typically masked in a graph or chart to protect privacy?

   (a) Personal Identification Information (PII)

   (b) Non-sensitive demographic data

   (c) Publicly available information

   (d) Numerical data

8. What is the purpose of using the "Data Connector" to link Excel data in Origin?

   (a) To transfer Excel data into Origin permanently

   (b) To synchronize changes made in Origin with the original Excel file

   (c) To create a separate copy of the Excel data in Origin

   (d) To import Excel data as an image in Origin

9. Which control sequence is used to insert a non-breaking space in LaTeX, ensuring that words are not separated at line breaks?

   (a) /space

   (b) /nobreakspace

   (c) /nbspace

   (d) /nonbreak

10. In LaTeX, what control sequence is used to create an inline mathematical expression within the text?

   (a) \math   (b) \equation

   (c) \textmath   (d) and

PART B — (5 × 5 = 25 marks)

Answer ALL the questions, choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) What are the objectives of Research?

Or

(b) What makes people do Research?

12. (a) Discuss the important concepts Relating to Research design.

Or

(b) Explain the basic Principles of experimental designs.

13. (a) Explain the need of Research Report.

Or

(b) Discuss the mechanics of report writing.

14. (a) Explain the creating multiple layer graphs in origin software.

Or

(b) Explain the Plotting a Range of the worksheet data in Origin software.

15. (a) Explain the Characters and control Sequences in Latex software.

Or

(b) Discuss the Characters in mathematical mode using Latex.

PART C — (5 × 8 = 40 marks)

Answer ALL the questions, choosing either (a) or (b)
Each answer should not exceed 600 words.

16. (a) Discuss in detail Problems encountered by Research in India.

Or

(b) Explain the technique involved in defining a Research problem.

17. (a) Explain the various steps of the experimental Research methods.

Or

(b) Explain the important concepts relating to Research design.

18. (a) Describe in detail the lag out involved evaluation of Research report.

Or

(b) Explain the general format of Research report.

19. (a) Explain how to perform a linear fit using origin software.

Or

(b) Explain the ways of working with Excel in origin.

20. (a) Explain with examples Latex used in Standard functions.

Or

(b) Explain the Producing simple documents using Latex.

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