

Mallinikya



Avinashilingam Institute for Home Science and Higher Education for Women
(Deemed to be University Estd. u/s 3 of UGC Act 1956, Category A by MHRD)
Re-accredited with 'A++' Grade by NAAC. Recognised by UGC Under Section 12B
Coimbatore - 641 043, Tamil Nadu, India

Continuous Internal Assessment Test II – April 2023

II SEMESTER

Class : II M.Ed
Major: Education

Time: 2 Hrs
Max. Marks: 60

21MEDC07 Advanced Educational Research and Statistics

Course outcomes

At the end of the course, students will:

- CO1** Choose appropriate quantitative or qualitative method to collect data
- CO2** Write a research proposal suitable for submission to a research funding body
- CO3** Carry out independent research using a range of research designs and methods
- CO4** Maintain respect for individual research contributions and intellectual property rights and demonstrate ethical behavior
- CO5** Interpret and present the results of an independently conducted statistical analysis

PART – A

Choose the correct answer

6 x 1 = 6

1. To ___ is the purpose of ethical Committee CO3K2
 - a. ensure that research is conducted in an ethical manner
 - b. promote the interests of the researchers
 - c. provide funding for research projects
 - d. make sure that research findings are kept confidential
2. What is patent law? CO4K1
 - a. The law that protects the exclusive rights of inventors to make, use, and sell their inventions
 - b. The law that regulates the use of copyrighted material
 - c. The law that regulates the use of trademarks
 - d. The law that protects the rights of individuals to their own personal property
3. What type of correlation coefficient is used to measure the strength of association between two ordinal variables? A) B) C) D) CO5K1
 - a. Pearson's Product Moment Correlation
 - b. Simple Regression Correlation
 - c. Spearman's Rank Order Correlation
 - d. Multiple Correlation
4. What is the best method for predicting a dependent variable from an independent variable? CO5K1
 - a. Multiple Regression
 - b. Simple Regression
 - c. Correlation Analysis
 - d. Scatter Plot Analysis
5. What is the standard error of the mean? CO4K1
 - a. A measure of the difference between two sample means
 - b. A measure of the variability in a population mean
 - c. A measure of the variability in a sample mean
 - d. A measure of the difference between two population means
6. Which method is used to compare the means of two independent large samples CO5K1
 - a. One-tailed t-test
 - b. Chi-square test
 - c. ANOVA
 - d. Two-tailed t-test

PART – B

Answer ALL questions

3 x 6 = 18

Each answer should not exceed 400 words or two pages

7. a. Discuss the importance of education and training in preventing plagiarism in scientific research and scholarly publishing. CO4K3

(OR)
7. b. What are some ethical considerations involved in the use of statistical methods in research and decision-making? How can we ensure that statistical analyses are conducted in a responsible and transparent manner? CO5K3
8. a. Explain the difference between the correlation coefficient and the slope of the regression line. How are these measures related, and what do they tell us about the relationship between two variables? CO5K4

(OR)
8. b. Describe some real-world applications of Simple Regression Analysis. How has it been used in scientific research, business, or other fields? CO5K3
9. a. Compare and contrast parametric and non-parametric methods. What are the advantages and disadvantages of each approach, and how do researchers choose between them? CO3K4

(OR)
9. b. A researcher wants to compare the weight gain of two different groups of rats over a period of 6 weeks. The first group consists of 10 rats fed a high-fat diet, while the second group consists of 12 rats fed a low-fat diet. The mean weight gain for the high-fat group is 250 grams with a standard deviation of 30 grams, CO5K4

while the mean weight gain for the low-fat group is 180 grams with a standard deviation of 20 grams. Is there a significant difference in weight gain between the two groups at a significance level of 0.01?

PART – C

Answer ALL questions

3 x 12 = 36

Each answer should not exceed 800 words or four pages

10. a. What is patent law, and how does it relate to scientific research? How can researchers protect their intellectual property rights and ensure that their discoveries are not unfairly exploited by others? What are some of the potential ethical issues that can arise when patents are used to restrict access to research findings or technologies? CO3K3

(OR)

10. b. Discuss the importance of proper citation and acknowledgement in scientific research. What are some of the key ethical considerations that researchers need to keep in mind when citing and acknowledging the work of others? How can researchers avoid plagiarism and ensure that they are giving credit where credit is due? CO4K3

11. a. Suppose you have collected data on the age (in years) and height (in inches) of 10 individuals. The data is as follows: CO5K5

Age (X)	Height (Y)
25	68
31	70
21	64
28	72
32	74
24	66
29	70
27	68
30	71
26	67

- a. Create a scatter plot of the data with age (X) on the horizontal axis and height (Y) on the vertical axis.
- b. What is the correlation coefficient between age and height?
- c. Does the scatter plot suggest a positive or negative relationship between age and height? Explain your answer.

(OR)

11. b. Explain how Simple Regression Analysis can be used to test hypotheses about the relationship between two variables. What are some examples of hypotheses that might be tested using Simple Regression Analysis? CO5K4

12. a. Describe the chi-square test of independence and its use in analyzing categorical data. Discuss the assumptions and requirements of this test, and provide an example of how it might be applied in practice. CO5K4

(OR)

12. b. Provide an overview of some of the key issues and challenges associated with analyzing frequencies using chi-square tests and contingency coefficients. How can researchers address these challenges, and what are some strategies for interpreting and presenting the results of these analyses? CO5K5

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