

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION MAY 2024
(First Semester)

Branch – CLINICAL NUTRITION AND DIETETICS

BIostatistics AND RESEARCH METHODS

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	What is one of the criteria for good research? a) Simplicity b) Complexity c) Reliability d) Subjectivity	K1	CO2
	2	Which type of research aims to explore a phenomenon in-depth without manipulating it? a) Descriptive research b) Experimental research c) Correlational research d) Causal research	K2	CO4
2	3	Plagiarism can be defined as: a) Properly citing sources b) Unauthorized use of someone else's work c) Collaborative research d) Creative writing	K1	CO2
	4	What is the role of an Institutional Human Ethics Committee (IHEC) in research? a) Data analysis b) Data collection c) Ethical review and oversight d) Research funding	K2	CO4
3	5	What is the basic formula for calculating the mortality rate? a) $(\text{Number of births} / \text{Total population}) * 100$ b) $(\text{Number of deaths} / \text{Total population}) * 100$ c) $(\text{Number of sick people} / \text{Total population}) * 100$ d) $(\text{Number of doctors} / \text{Total population}) * 100$	K1	CO2
	6	How can SPSS be used in research? a) To make coffee for researchers b) To conduct statistical analysis and data management c) To write research reports d) To measure sickness in the population	K2	CO4
4	7	Which statistical measure represents the most typical value in a dataset? a) Range b) Median c) Standard Deviation d) Correlation	K1	CO2
	8	What is the concept behind the Karl Pearson's coefficient of correlation? a) It measures the strength of a linear relationship between two variables. b) It calculates the mean of two variables. c) It computes the mode of a dataset. d) It determines the range of data.	K2	CO4

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5	9	What is the primary difference between large sample tests and small sample tests in hypothesis testing? a) Large sample tests use smaller sample sizes. b) Small sample tests are less accurate. c) Small sample tests are only used for proportions. d) Small sample tests use smaller samples, and large sample tests use larger samples.	K1	CO2
	10	In hypothesis testing, what is the p-value used for? a) To calculate the population proportion b) To determine the research design c) To assess the strength of evidence against a null hypothesis d) To construct a confidence interval	K2	CO4

SECTION - B (35 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks

(5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11. (a)	Define and explain the concept of research design.	K3	CO1
	(OR)			
	(b)	Discuss the development of a research process. Explain the steps involved in the research process and how it contributes to successful research.		
2	12. (a)	Explore the role and responsibilities of institutional human ethics committees in research. How do they ensure ethical standards in research studies?	K4	CO3
	(OR)			
	(b)	Discuss the classification of data, tabulation, and the use of diagrammatic and graphical representations in research.		
3	13. (a)	Describe how SPSS can be utilized for data analysis and interpretation.	K4	CO3
	(OR)			
	(b)	Explain the role of vital statistics in demographic research.		
4	14. (a)	Compare and contrast Karl Pearson's coefficient of correlation and Spearman's rank correlation.	K5	CO5
	(OR)			
	(b)	Discuss the concept of simple regression analysis, emphasizing the regression coefficient method.		
5	15. (a)	Describe the one-way ANOVA test. Provide a practical example of when one-way ANOVA is applied and the steps involved in conducting the test.	K5	CO5
	(OR)			
	(b)	Discuss the chi-square test and its applications in research, including testing independence of attributes and goodness of fit.		

SECTION -C (30 Marks)

Answer ANY THREE questions

ALL questions carry EQUAL Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO																						
1	16.	Describe the key features of a good research design. Provide examples to illustrate these features. Explain the steps involved in developing a research process.	K3	CO1																						
2	17.	Discuss the significance of data classification and tabulation in research. Explain the steps involved in constructing research preform.	K4	CO3																						
3	18.	Describe health statistics, including their sources, and the challenges involved in collecting sickness data. How can statistics, particularly using software like SPSS, be applied to health research?	K4	CO3																						
4	19.	<p>The soporific effect of drugs A and B was studied on ten patients separately. The result were assessed for the additional hours to sleep produced by the drugs. Compare soporific effects of the drugs from the following data:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tbody> <tr> <td>Drug A</td> <td>0.7</td> <td>1.6</td> <td>0.2</td> <td>1.2</td> <td>0.1</td> <td>3.4</td> <td>3.7</td> <td>0.8</td> <td>0.0</td> <td>2.0</td> </tr> <tr> <td>Drug B</td> <td>1.9</td> <td>0.8</td> <td>1.1</td> <td>0.1</td> <td>0.1</td> <td>4.4</td> <td>5.5</td> <td>1.6</td> <td>4.6</td> <td>3.6</td> </tr> </tbody> </table> <p>Difference is insignificant.</p>	Drug A	0.7	1.6	0.2	1.2	0.1	3.4	3.7	0.8	0.0	2.0	Drug B	1.9	0.8	1.1	0.1	0.1	4.4	5.5	1.6	4.6	3.6	K5	CO5
Drug A	0.7	1.6	0.2	1.2	0.1	3.4	3.7	0.8	0.0	2.0																
Drug B	1.9	0.8	1.1	0.1	0.1	4.4	5.5	1.6	4.6	3.6																
5	20.	Discuss the concept of hypothesis testing. Outline the steps involved and types of hypothesis tests. Explain the large sample tests as well as small sample t-tests for single and two means (both independent and dependent samples).	K5	CO5																						

Z-Z-Z

END