

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2023
(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 the primary purpose of research? a) Data collection b) Problem-solving c) Decision-making d) Data analysis	K1	CO2
	2.	What are the basic principles of a good research design? a) Simplicity and brevity b) Complexity and redundancy c) Clarity and coherence d) Rigor and flexibility	K2	CO4
2	3.	What is a method used for collecting primary data in research? a) Literature review b) Surveys c) Secondary sources d) Observations	K1	CO2
	4.	Which type of scale allows for ranking and equal intervals between values? a) Nominal scale b) Ordinal scale c) Interval scale d) Ratio scale	K2	CO4
3	5.	When did the last census held in India under the Ministry of Home Affairs? a) 2010 b) 2011 c) 2012 d) 2013	K1	CO2
	6.	What is the primary use of vital statistics? a) To measure the quality of life b) To assess economic growth c) To monitor population health and demographics d) To estimate the number of medical professionals	K2	CO4
4	7.	In regression analysis, what does the regression coefficient method calculate? a) The strength of the relationship between two variables b) The standard deviation of the dataset c) The mean of a dataset d) The mode of a dataset	K1	CO2
	8.	What is the purpose of multiple regression analysis in research? a) To analyse several datasets at once b) To test the significance of a single variable c) To understand the relationship between multiple independent variables and a dependent variable d) To calculate the range of data	K2	CO4

Cont...

5	9.	What is the concept of a confidence interval (CI) in statistics? a) A range of values that provides an estimate of a population parameter b) A graph representing data points c) A statistical test for independence d) A measure of central tendency	K1	CO2
	10.	When is a chi-square test used in research? a) To calculate the mean b) To test the independence of attributes and goodness of fit c) To estimate a population proportion d) To compare two means	K2	CO4

SECTION - B (35 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 7 = 35)

Module No.	Question No.	Question	K Level	CO																
1	11. (a)	Discuss the importance of a clear research objective and provide insights into the research motivation.	K2	CO4																
		(OR)																		
	(b)	Describe the key elements of a strong research design and outline the criteria for quality research.																		
2	12. (a)	Explain data collection methods and their importance in research.	K3	CO1																
		(OR)																		
	(b)	Describe the concept of plagiarism, its types, and strategies to prevent it.																		
3	13. (a)	Discuss the basic formulas for calculating birth rate, mortality rate, morbidity rate, and fertility rate. How are these statistics important in public health research?	K3	CO1																
		(OR)																		
	(b)	Discuss the challenges and problems in the collection of sickness data in health research.																		
4	14. (a)	Define and discuss the measures of central tendency, including mean, median, and mode. Provide a real-world example for each measure.	K4	CO3																
		(OR)																		
	(b)	The mean age of 40 students is 16 years and the mean age of another group of 60 students is 20 years. Find out the mean age of all the 100 students combined together.																		
5	15. (a)	Describe the different types of confidence intervals, such as those for population mean (with known and unknown standard deviation) and population proportion. Provide examples for each.	K4	CO3																
		(OR)																		
	(b)	Find the co-efficient of correlation between the height of fathers and sons from the data: <table border="1" style="margin-left: 20px;"> <tr> <td>Height of Fathers (X)</td> <td>65</td> <td>66</td> <td>67</td> <td>68</td> <td>69</td> <td>70</td> <td>71</td> </tr> <tr> <td>Height of Sons (Y)</td> <td>67</td> <td>68</td> <td>66</td> <td>69</td> <td>72</td> <td>72</td> <td>69</td> </tr> </table>	Height of Fathers (X)	65	66	67	68	69	70	71	Height of Sons (Y)	67	68	66	69	72	72	69		
Height of Fathers (X)	65	66	67	68	69	70	71													
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SECTION -C (30 Marks)

Answer ANY THREE questions
 ALL questions carry EQUAL Marks (3 x 10 = 30)

Module No.	Question No.	Question	K Level	CO																								
1	16.	Elaborate on the concept of research significance and how it impacts the research process. Discuss the different types of research.	K2	CO4																								
2	17.	Discuss the process of scientific writing and communication, including report writing and the publication of research articles and abstracts and importance of intellectual property rights in research.	K3	CO1																								
3	18.	Define vital statistics and discuss their uses in the field of health research.	K3	CO1																								
4	19.	Discuss the measures of dispersion with their coefficient. Provide real-world examples to illustrate their use.	K4	CO3																								
5	20.	<p>In the following table the crop yield of three varieties of crop from four different fields is shown. Test whether</p> <p>(i) the mean yields of these varieties are equal and so also</p> <p>(ii) the quality of yield mean.</p> <table border="1" style="margin-left: 40px;"> <thead> <tr> <th rowspan="2">Variety of Crops</th> <th colspan="4">Fields</th> </tr> <tr> <th>I</th> <th>II</th> <th>III</th> <th>IV</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>9</td> <td>5</td> <td>9</td> <td>7</td> </tr> <tr> <td>B</td> <td>7</td> <td>9</td> <td>5</td> <td>5</td> </tr> <tr> <td>C</td> <td>7</td> <td>8</td> <td>4</td> <td>9</td> </tr> </tbody> </table>	Variety of Crops	Fields				I	II	III	IV	A	9	5	9	7	B	7	9	5	5	C	7	8	4	9	K4	CO3
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Z-Z-Z

END