# PSG COLLEGE OF ARTS & SCIENCE
## (AUTONOMOUS)

## MSc DEGREE EXAMINATION DECEMBER 2025
### (First Semester)

### Branch – CLINICAL NUTRITION AND DIETETICS

### BIOSTATISTICS RESEARCH METHODS AND IPR

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 | Which of the following is not a criterion for good research? <br> a) Clearly defined objectives b) Lack of ethical consideration <br> c) Systematic methodology d) Reproducibility of finding | K1 | CO1 |
| | 2 | In sampling, a larger sample size generally leads to: <br> a) Higher sampling error b) Lower sampling error <br> c) More bias d) Less precision | K2 | CO1 |
| 2 | 3 | What does IPR stand for in the context of research? <br> a) International Patent Regulations <br> b) Intellectual Property Rights <br> c) Indian Patent Registry <br> d) Internal Project Review | K1 | CO2 |
| | 4 | Which of the following is a strategy to remove plagiarism? <br> a) Copying text directly from a source and citing it <br> b) Paraphrasing ideas without citing the original source <br> c) Using quotation marks for direct quotes and citing the source <br> d) Submitting someone else work as your own | K2 | CO2 |
| 3 | 5 | Which measure of central tendency is most affected by extreme values(outliers)? <br> a) Mean b) Median <br> c) Mode d) All are equally affected | K1 | CO3 |
| | 6 | Identify coefficient that measures the strength and direction of a linear relationship between two continuous variables. <br> a) Spearman's rank correlation <br> b) Karl Pearson's coefficient of correlation <br> c) Chi-square statistic <br> d) F-statistic | K2 | CO3 |
| 4 | 7 | A 95% Confidence interval for a population mean implies that: <br> a) There is a 95% chance that the sample mean falls within the interval <br> b) 95% of the data points fall within this interval <br> c) If we repeatedly sample and construct intervals,95% of these intervals would contain the true population mean. <br> d) The probability of the population mean being outside this interval is 95% | K1 | CO4 |
| | 8 | In hypothesis testing, what is the null hypothesis typically denoted as? <br> a) H1   b) Ha   c) H0   d) A | K2 | CO4 |
| 5 | 9 | Recall the test that is used to compare the means of two independent samples when the sample size are small <br> a) F-test b) ANOVA <br> c) t-test d) Chi-square | K1 | CO5 |
| | 10 | ANOVA is primarily used for <br> a) Testing the independence of attributes <br> b) Comparing means of two groups only <br> c) Comparing means of three or more groups <br> d) Testing the correction between variables | K2 | CO5 |

## 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. | Enumerate and briefly explain the various methods of data collection in research. | K2 | CO1 |
| | | (OR) | | |
| | 11.b. | Describe the different types of literature-based studies. | | |
| 2 | 12.a. | Define vital statistics and explain its uses in public health and policy planning. | K3 | CO2 |
| | | (OR) | | |
| | 12.b. | Elaborate the roles and responsibilities of an institutional human ethics committee. | | |
| 3 | 13.a. | Delineate about the measures of Dispersion. | K3 | CO3 |
| | | (OR) | | |
| | 13.b. | Apply co-efficient of correlation for the following data. <br> X: 12, 9, 8, 10, 11, 13, 7 <br> Y: 14, 8, 6, 9, 11, 12, 3 | | |
| 4 | 14.a. | Explain the procedure of large sample tests for testing a single proportion and two proportions. | K3 | CO4 |
| | | (OR) | | |
| | 14.b. | Explain briefly the Concept of Hypothesis testing. | | |
| 5 | 15.a. | The sales data of an item in six shops before and after a special promotional campaign are as under. <br> Before Campaign: 53, 28, 31, 48, 50, 42 <br> After Campaign: 58, 29, 30, 55, 56, 45 <br> Can the campaign be judged to be success? Use paired t test at 5% level. | K3 | CO5 |
| | | (OR) | | |
| | 15.b. | Discuss the application of Statistics using SPSS. | | |

For 13.b:

| X | 12 | 9 | 8 | 10 | 11 | 13 | 7 |
|---|---|---|---|---|---|---|---|
| Y | 14 | 8 | 6 | 9 | 11 | 12 | 3 |

For 15.a:

| Before Campaign: | 53 | 28 | 31 | 48 | 50 | 42 |
|---|---|---|---|---|---|---|
| After Campaign: | 58 | 29 | 30 | 55 | 56 | 45 |

## 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 steps involved in structuring a research proposal and justify why each step is important. | K1 | CO1 |
| 2 | 17 | Explain the calculation of mortality rate, morbidity rate, and fertility rate, and give examples for each. | K3 | CO2 |
| 3 | 18 | Apply mean, median & mode for the following data. | K3 | CO3 |
| 4 | 19 | Intelligence test on two groups of boys & girls gave the following results. <br> Is there is a significant difference in the mean scores obtained by boys & girls? | K4 | CO4 |
| 5 | 20 | Of the 1000 workers in a factory exposed to an epidemic, 700 in all were attacked, 400 had been inoculated and of these, 200 were attacked. On the basis of this information, can it be said that inoculation and attack are independent? Use Chi-Square test. | K4 | CO5 |

For 18:

| Mid Values: | 59 | 61 | 63 | 65 | 67 | 69 | 71 | 73 |
|---|---|---|---|---|---|---|---|---|
| Frequency: | 1 | 2 | 9 | 48 | 131 | 102 | 40 | 17 |

For 19:

| | Mean | SD | N |
|---|---|---|---|
| Girls | 75 | 15 | 150 |
| Boys | 70 | 20 | 250 |

Z-Z-Z    END