22NDP312N

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION MAY 2025
(Third Semester)

Branch - **FOODS AND NUTRITION**

RESEARCH METHODOLOGY AND STATISTICS

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 research type involves collecting data to describe the characteristics of a population? A) Experimental Research B) Descriptive Research C) Historical Research D) Correlational Research	K1	CO1
	2	What is the primary goal of research? A) To entertain B) To confirm existing beliefs C) To discover new knowledge or insights D) To avoid making decisions	K2	CO1
2	3	Which method involves asking questions directly to individuals to gather information? A) Observation B) Surveys C) Experimentation D) Document Analysis	K1	CO2
	4	What is the purpose of tabulating data? A) To convert qualitative data into quantitative data B) To organize data into tables for easier analysis C) To summarize data using graphical methods D) To perform statistical tests on data	K2	CO2
3	5	What is the formula for calculating the standard deviation of a dataset? A) Square root of the variance B) Mean of absolute deviations C) Sum of squared deviations from the mean D) Difference between the highest and lowest values	K1	CO3
	6	Which of the following values is indicative of a perfect positive correlation? A) -1 B) 0 C) 1 D) 0.5	K2	CO3
4	7	In the Poisson distribution, what does the parameter λ\lambdaλ (lambda) represent? A) The number of events in a given interval B) The probability of a single event C) The average rate of occurrence of events D) The standard deviation of the distribution	K1	CO4
	8	In a chi-square test for independence, what does the null hypothesis state? A) The observed frequencies are equal to the expected frequencies. B) There is no relationship between the two categorical variables. C) The observed and expected values are normally distributed. D) The variances between groups are equal.	K2	CO4
5	9	In a binomial distribution, what does the variable p represent? A) The number of trials B) The probability of failure C) The probability of success D) The number of successes	K1	CO5
	10	What should be included in the conclusion section of a research report? A) The background of the study B) Detailed results and data C) A summary of the findings and their implications D) References and citations	K2	CO5

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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.	Determine the steps involved in sampling design	K5	CO1
		(OR)		
	11.b.	Explain about sampling and non-sampling errors in research.		
2	12.a.	Organise the advantages and disadvantages of questionnaire method of data collection.	K3	CO2
		(OR)		
	12.b.	Construct the various types of table used in research.		
3	13.a.	Calculate the mean deviation and its co-efficient from the following data: Class / Frequency / Class / Frequency 0-10 / 5 / 40-50 / 20 10-20 / 8 / 50-60 / 14 20-30 / 12 / 60-70 / 12 30-40 / 15 / 70-80 / 6	K3	CO3
		(OR)		
	13.b.	Two ladies were asked to rank 7 different types of lipsticks. The ranks given by them are as follows: Lipsticks: A B C D E F G Neelu: 2 1 4 3 5 7 6 Neena : 1 3 2 4 5 6 7 Calculate spearman's rank correlation co-efficient.		
4	14.a.	The mean weight of 500 male students in a certain college is 151lbs and the standard deviation is 15 lbs. Assuming the weights are normally distributed, find how many students weights (a) Between 120 and 155 lbs; and (b) More than 185 lbs	K3	CO4
		(OR)		
	14.b.	Sample of two different types gave the following data: Type I / Type II Sample size 10 / 18 Sample mean 170 / 205 Sample S.D 20 / 25 Is the difference in the means significant? [For V=26, $t_{0.05} = 2.056$].		
5	15.a.	Build the various types of diagrams used in research.	K6	CO5
		(OR)		
	15.b.	Describe about bibliography and appendices.		

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	Explain briefly the various types of research.	K5	CO1
2	17	Identify and build the Interview schedule as a method of data collection	K3	CO2

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<table>
<tr><td>3</td><td>18</td><td>The following table shows the ages (X) and blood pressure (Y) of 8 persons.
X: 52 63 45 36 72 65 47 25
Y: 62 53 51 25 79 43 60 33
Obtain the regression equation Y on X and find the expected blood pressure of a persons. who is 49 years old?</td><td>K3</td><td>CO3</td></tr>
<tr><td>4</td><td>19</td><td>The following data represent the number of units of production per day turned out by 5 different workers using 4 different types of machines:
<table><tr><th></th><th colspan="4">Machine types</th></tr><tr><th>Workers</th><th>A</th><th>B</th><th>C</th><th>D</th></tr><tr><td>1</td><td>44</td><td>38</td><td>47</td><td>36</td></tr><tr><td>2</td><td>46</td><td>40</td><td>52</td><td>43</td></tr><tr><td>3</td><td>34</td><td>36</td><td>44</td><td>32</td></tr><tr><td>4</td><td>43</td><td>38</td><td>46</td><td>33</td></tr><tr><td>5</td><td>38</td><td>42</td><td>49</td><td>39</td></tr></table>(a) Test whether the mean productivity is the same for the different machine types.
(b) Test whether the 5 men differ with respect to mean productivity?
[Given for V_1=3 and V_2=12 at 5% level, $F_{0.05}$ = 3.4 and for V_1=4 and V_2=12 at 5% level, $F_{0.05}$ = 3.26]</td><td>K3</td><td>CO4</td></tr>
<tr><td>5</td><td>20</td><td>Discuss the different parts of a good research report.</td><td>K6</td><td>CO5</td></tr>
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Z-Z-Z END