23FTP315

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2025
(Third Semester)

Branch – **FOOD TECHNOLOGY MANAGEMENT**

RESEARCH METHODOLOGY & BIOSTATISTICS

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	The process of examining the truth of a statistical hypothesis, relating to some research problem is known as (a) Treatment (b) Control group (c) Experiment (d) Resenrol	K1	CO1
	2	Two-way ANOVA Technique is used (a) SRS (b) RBD (c) LSD (d) None	K2	CO1
2	3	The method of convince sampling is also called the _____ sampling (a)Judgment (b) Quota (c)Chunck (d) None	K1	CO2
	4	Choose the Formula for systematic sampling (a) $n=(z\sigma/d)^2$ (b) $\sigma\ p=\sqrt{}\ pq/N$ (c) k=N/n (d) k=n/N	K2	CO2
3	5	Spearman's rank correlation coefficient is defined as (a) $R=1+6\Sigma D^2 / N(N^2-1)$ (b) $R=1-6\Sigma D^2 / N(N^2-1)$ (c) $R=1+6\Sigma D^2 /N(N^2+1)$ (d) $R=1-6\Sigma D^2 /N(N^2+1)$	K1	CO3
	6	Find the mean values of two random variables have the regression equations 3x+2y-26=0 and 6x+y-31=0 (a) $\bar{x}=5, \bar{y}=-5$ (b) $\bar{x}=7, \bar{y}=10$ (c) $\bar{x}=4, \bar{y}=7$ (d) $\bar{x}=-4, \bar{y}=-7$	K2	CO3
4	7	95% confidence limits of population means (a) $\bar{x}\pm1.96\sigma/\sqrt{\pi}$ (b) $\bar{x}\pm2.58\sigma/\sqrt{\pi}$ (c) $\bar{x}\pm2.96\sigma/\sqrt{\pi}$ (d) $\bar{x}\pm\sigma/\sqrt{\pi}$	K1	CO4
	8	The hypothesis is true but our best rejects it (a) Type II error (b) Type I error (c) Correct decision (d) Confidence interval	K2	CO4
5	9	Who developed the Analysis of variance technique? (a) Spear man's (b) R.A. Fisher (c) Pearson (d) None	K1	CO5
	10	The Number of degrees of freedom in a 3 x 3 contingency table is (a) 8 (b) 4 (c) 3 (d) 2	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.	Discuss the classification and tabulation of data with suitable example.	K2	CO1
		(OR)		
	11.b.	Differentiate between Questionnaires and schedules.		
2	12.a.	Explain briefly about sampling errors.	K4	CO2
		(OR)		
	12.b.	Explain lottery method with limitation.		
3	13.a.	Analyse the rank correlation coefficient between the variables x and y from the following pairs of observed values X: 50 55 65 50 55 60 50 65 70 75 Y: 110 110 115 125 140 115 130 120 115 160	K4	CO3
		(OR)		
	13.b.	Analyze the following data by using standard deviation. Age under:10 20 30 40 50 60 70 80 dying: 15 30 53 75 100 110 115 125		
4	14.a.	A college conducted both day and evening classes intended to be identical. A sample of 100 day students yield examination results as under: x_1=72.4,σ_1=14.8. A sample of 200 evening students yield examination results as under: x_2=73.9, σ_2=17.9. Are they two statistically equal at 1% of level?	K5	CO4
		(OR)		
	14.b.	Explain the testing procedure for two mean t test.		
5	15.a.	Explain one-way classification of ANOVA.	K5	CO5
		(OR)		
	15.b.	In a certain sample of 2000 families, 1400 families are consumers of tea. Out of 1800 Hindu families, 1236 families consume tea. Use Chi-Square test and state whether there is any significant difference between consumption of tea among Hindu and Non- Hindu Families.		

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	Discuss the Basic principle of experimental Designs and their Importance.	K2	CO1
2	17	Explain the probability and non-probability sampling methods	K3	CO2
3	18	In a correlation study the following values are obtained: Mean : X=65 Y=67 Standard deviation : σ_x=2.5 σ_y=3.5 Coefficient of correlation r=0.8 Find the two regression equations that are associated with the above values.	K4	CO3
4	19	The mean life of a sample of 10 electric light bulbs was found to be 1,456 hours with standard deviation of 423 hours. A second sample of 17 bulbs chosen from a different batch showed a mean life of 1,280 hours with standard deviation of 398 hours. Is there a significant difference between the means of the two batches? Analyse.	K5	CO4
5	20	Discuss Analysis of varience of data. A B C D $\begin{bmatrix} 8 & 12 & 18 & 13 \\ 10 & 11 & 12 & 9 \\ 12 & 9 & 16 & 12 \\ 7 & 4 & 8 & 15 \end{bmatrix}$	K5	CO5

Z-Z-Z END