25CAP105 / 22CAP105N

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MCA DEGREE EXAMINATION DECEMBER 2025
(First Semester)

Branch – **COMPUTER APPLICATIONS**

STATISTICAL 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	The mean of the distribution is 40 and standard deviation is 4, then the co-efficient of variation is a) 10 b) 40 c) 100 d) 0.1	K1	CO1
	2	If the standard deviation (SD) of a dataset is zero, it means: a) All observations are equal b) The mean is zero c) Variance is undefined d) Data is highly dispersed	K2	CO1
2	3	Spearman's rank correlation is most suitable when the data are: a) Quantitative and normally distributed b) Qualitative and nominal in nature c) Ordinal (ranked data) d) Measured on ratio scale only	K1	CO2
	4	In regression analysis, the variable that is predicted is called the: a) Independent variable b) Dependent variable c) Correlation variable d) Regression constant	K2	CO2
3	5	Bayes' theorem is mainly used to: a) Find the probability of independent events b) Find conditional probability of events c) Test significance of hypothesis d) Calculate variance of a distribution	K1	CO3
	6	For a normal distribution, the values of mean, median, and mode are: a) Mean > Median > Mode b) Mean < Median < Mode c) Mean = Median = Mode d) Mean ≠ Median ≠ Mode	K2	CO3
4	7	The statement "there is no significant difference between the population mean and the sample mean" refers to: a) Alternative hypothesis (H_1) b) Null hypothesis (H_0) c) One-tailed test d) Type II error	K1	CO4
	8	A two-tailed test is appropriate when the research question is: a) Whether the mean is greater than a specified value b) Whether the mean is less than a specified value c) Whether the mean is equal to or different from a specified value d) Whether two variances are equal	K2	CO4
5	9	When performing a t-test for a single mean, which assumption is necessary? a) Sample size must always be greater than 30 b) Population standard deviation is known c) Population is normally distributed d) Data must be nominal	K1	CO5
	10	The run test is mainly used to check: a) Equality of two variances b) Independence and randomness of data c) Normality of distribution d) Equality of two means	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.	Compute mean & median of the following data. Class Interval : 0 – 9 10–19 20–29 30–39 40–49 50–59 Frequency : 3 15 10 8 3 1	K2	CO1
		(OR)		
	11.b.	Explain the measures of dispersion with its coefficient of variation.		
2	12.a.	Explain the types of correlation with example.	K4	CO2
		(OR)		
	12.b.	Analyze the following data by using Karl Pearson's correlation. X : 20 30 33 22 15 13 26 Y : 17 19 20 11 16 24 18		
3	13.a.	A card is drawn at random from a well shuffled pack of cards. What is the probability that it is a heart or queen?	K4	CO3
		(OR)		
	13.b.	Explain Binomial distribution and its properties.		
4	14.a.	Explain the general procedure of testing a hypothesis.	K5	CO4
		(OR)		
	14.b.	The mean of two large samples of sizes 1000 and 2000 are 67.5 and 68.0 respectively. Test the equality of means of the two populations each with standard deviation 2.5. state its assumptions clearly.		
5	15.a.	Explain the testing procedure fo t – test for two means.	K5	CO5
		(OR)		
	15.b.	Explain the steps of One-way ANOVA with example.		

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	Compute Standard deviation and co-efficient of variation for the following data. Profit (in Lakhs) : 10-20 20-30 30-40 40-50 50-60 60-70 No.of Banks : 10 20 35 25 15 5	K2	CO1
2	17	The following table gives the various values of two variables. X : 42 44 58 55 89 98 66 Y : 56 49 53 58 65 76 58 Construct the two regression equations.	K3	CO2
3	18	State and prove addition & multiplication theorem on probability.	K5	CO3
4	19	Explain the test of significance of difference between two sample proportions.	K4	CO4
5	20	A sample of 9 students has mean score 72 with SD 8. Test whether the mean differs significantly from 75 at 5% level.	K5	CO5

Z-Z-Z END