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22CAU103N

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BCA DEGREE EXAMINATION MAY 2026
(First Semester)

Branch – **COMPUTE APPLICATIONS**

STATISTICS & OPERATIONS RESEARCH

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 arithmetic mean is (i) Most frequent value (ii) Middle value (iii) Sum of values/ number of values (iv) Difference between values	K1	CO1
	2	Coefficient of variation is: (i) Mean / SD (ii) SD / Mean * 100 (iii) Mean * SD (iv) SD^2	K2	CO1
2	3	The value of correlation lies between (i) 0 to 1 (ii) -1 to +1 (iii) 0 to ∞ (iv) -∞ to +∞	K1	CO2
	4	If correlation is +1, it indicates (i) No correlation (ii) Perfect Negative Correlation (iii) Perfect Positive Correlation (iv) Weak Correlation	K2	CO2
3	5	t – Test is used when: (i) Sample is large (ii) Population variance is known (iii) Sample size is small (iv) Data is grouped	K1	CO3
	6	Chi-square test is used for: (i) Means (ii) Variance (iii) Attributes (iv) Correlation	K2	CO3
4	7	LPP stands for: (i) Linear Practical Problem (ii) Linear Programming Problem (iii) Logical Programming Problem (iv) Linear Probability Problem	K1	CO4
	8	The feasible region is: (i) Outside Constraints (ii) Intersection of constraints (iii) Only objective function (iv) Infinite region always	K2	CO4
5	9	NWC method is used to find (i) Optimal solution (ii) IBFS (iii) Final solution (iv) Dual solution	K1	CO5
	10	Critical path is (i) Shortest path (ii) Longest path (iii) Random path (iv) Optional path	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.	Describe the Limitation of statistics	K4	CO1
		(OR)		
	11.b.	State Histogram and draw a Histogram from the following table.		

Wages in Rs	0-10	10-20	20-30	30-40	40-50	50-60	60-70
No of workers	5	12	19	21	18	10	4

Cont...

2	12.a.	Explain Scatter Diagram. And State its merits and De-Merits.	K5	CO2
		(OR)		
	12.b.	Calculate Spearman Rank Correlation for the following data. Marks in Statistics: 148 160 172 162 156 140 139 152 130 Marks in Geography: 162 178 165 170 138 154 160 132 131		
3	13.a.	The mean Hb level of 81 women was 10.9 gm%, with an SD of 2.2 gm %. The population mean was 11.4gm %. Test the Hypothesis that there is no difference between the sample mean and the population mean. [Z=1.96, at 5% level of significance]	K4	CO3
		(OR)		
	13.b.	Define ANOVA and write their assumptions.		
4	14.a.	Explain the simplex method procedure to solve a linear programming problem	K5	CO4
		(OR)		
	14.b.	Solve the following LPP Max $Z = 10x_1+6x_2$ s.to $5x_1+3x_2 \leq 30$ $x_1+2x_2 \leq 18$ And $X_1, x_2 \geq 0$		
5	15.a.	Determine an IBFS to the following least cost method.	K5	CO5
		(OR)		
	15.b.	Explain briefly (i) North West Corner Rule. (ii)Vogel's Approximation Method.		

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	Find Median and Mode for the following data. C. I. 0 – 10 10 – 20 20 – 30 30 – 40 40 – 50 50 – 60 60 – 70 F 3 8 14 20 8 5 2	K4	CO1
2	17	Calculate Co – efficient of Correlation from the below data. Sales (x) : 61 72 73 63 84 80 66 76 Expenses (y): 40 52 49 43 61 58 42 58	K4	CO2
3	18	In a cohort study among 200 alcoholics, 50 have developed cirrhosis. Among 300 non alcoholics, 40 have developed cirrhosis. Find out if there is any association between alcohol and cirrhosis. (Table value of χ^2 at 0.05 level of significance with 1 degree of freedom is 3.84)	K4	CO3
4	19	Use simplex method to solve the LPP Max $Z = 5x_1+3x_2$ s.to $x_1+x_2 \leq 2$ $5x_1+2x_2 \leq 10$ And $X_1, x_2 \geq 0$	K4	CO4
5	20	Solve the following Transportation Problem.	K4	CO5

From	To			Available
	a	b	c	
I	6	8	4	14
II	4	9	8	12
III	1	2	6	5
Demand	6	10	15	

Z-Z-Z END