QP CODE: D2BCA2402	**(Pages: 3)**	**Reg. No**	**: .....**
		Name	**: .....**

SECOND SEMESTER FYUGP EXAMINATION, APRIL 2025

MAJOR COURSE

BCA2CJ102 : STATISTICAL FOUNDATION FOR COMPUTER APPLICATIONS

(Credits: 4)

Time: 2 Hours **Maximum Marks: 70**

Section A

Answer the following questions. Each carries 3 marks (Ceiling: 24 marks)

1.	List three advantages of using primary data over secondary data.	BL1	CO1
2.	Given the regression equation $Y = 5 + 2X$, Find Y when X = 10	BL2	CO3
3.	In a deck of 52 cards, find the probability of drawing a King given that the card drawn is a face card.	BL1	CO5
4.	What is the purpose of a t-test in statistics?	BL1	CO5, CO6
5.	What is scattered diagram? From the scatter diagram how do you infer the nature of relationship of the variables.	BL2	CO3
6.	Define the following terms with an example: (a) Sample Point, (b) Sample Space, (c) Random Experiment.	BL1	CO4
7.	What do you understand by dispersion?	BL1	CO1
8.	Define Bayes' Theorem and state its formula.	BL1	CO4
9.	What are some real-world examples of discrete and continuous probability distributions?	BL2	CO4
10.	A hospital tests a new drug for effectiveness. Identify possible Type I and Type II errors in this context.	BL1	CO5

(PTO)

Section B

Answer the following questions. Each carries 6 marks (Ceiling: 36 Marks)

11.	A student claims that the probability of getting a tail when tossing a fair coin is 0.3. Evaluate whether this claim is correct or not, using probability axioms.	BL3	CO4
12.	Find Geometric mean. | Marks | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 | | number of students | 5 | 7 | 15 | 25 | 8 |	BL2	CO1
13.	From the following information find regression equations and estimate the production when the capacity utilisation is 70%. | | Average (Mean) | Standard Deviation | | Production (in lakh units) | 42 | 12.5 | | Capacity Utilisation (%) | 88 | 8.5 | | Correlation Coefficient (r) | 0.72 | |	BL3	CO3
14.	A courier company delivers an average of 12 parcels per day in a particular city. Assuming the number of parcels delivered follows a Poisson distribution, find the probability that on a given day: (a) Exactly 10 parcels are delivered. (b) At least 2 parcels are delivered.	BL3	CO6
15.	Differentiate between mutually exclusive and exhaustive events with appropriate illustrations. Discuss the importance of mutually exclusive events in probability theory with real-life examples.	BL2	CO4
16.	If P(A)= 0.5, P(B) = 0.6, $P(A \cap B)$= 0.2. Find a) $P(A \cup B)$. b) P(A'). c) $P(A \cap B')$. d)$P(A' \cap B')$.	BL2	CO4
17.	A variable follows a normal distribution with mean 120 and standard deviation 10. Find the probability that a randomly selected value is: (a) Less than 110 (b) Between 115 and 130	BL1	CO5

18.	For a given sample of size 100 from a normal population, the sample mean is 50, and the population standard deviation is 8. Construct a 95% confidence interval for the population mean. ($Z_{\frac{\alpha}{2}} = 1.96$)	BL3	CO4
	Section C		
	Answer any one question. Each carries 10 marks (1 x 10 = 10 Marks)		
19.	a) Suppose that the probability of a woman entering a shop buys rice is 0.90 and the probability that she buys sugar is 0.70. Assuming that she is free to choose the items for puchase, what is the probability that she will buy both sugar and rice ? b) A bag contains 80 good and 20 bad oranges. Two oranges are chosen at random without replacement. What is the probability that both are defective.	BL3	CO5
20.	a) The overall percentage of failure in a certain examination is 40, what is the probability that out of a group of 6 candidates atleast 4 passed examination ? b) From the production process which turns 5% defective on an average, a sample of size 10 is drawn. Find the probability that the sample contains (i) no defective (ii) at most one defective (iii) at least one defective	BL3	CO5
	CO : Course Outcome		
	BL : Bloom's Taxonomy Levels (1 – Remember, 2 – Understand, 3 – Apply, 4 – Analyse, 5 – Evaluate, 6 – Create)		