QP Code: U25B038

Reg. No : .....

Name : .....

ST MARY'S COLLEGE (AUTONOMOUS), THRISSUR-20

II SEMESTER (FYUGP) DEGREE EXAMINATION, MARCH 2025

BCA

BCA2CJ102 : STATISTICAL FOUNDATION FOR COMPUTER APPLICATIONS

2024 Admission Onwards

(Credits: 4)

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

Section A

*Answer **all**. Each question carries **3** Marks* ***(Ceiling: 24 Marks)***

1. What is meant by geometric mean? Write its formula. [BTL1]
2. What are the normal equations used in the least squares method for fitting a straight line? [BTL2]
3. Define the Method of Moments in parameter estimation. [BTL1]
4. If P(E)=3/10 , P(F) = 1/2 and P(F|E) = 2/5 then find P(E|F). [BTL3]
5. State and prove De Morgan's laws for two events, using basic set operations. [BTL1]
6. State and explain the Addition Theorem of Probability for two events. [BTL2]
7. Define exclusive events with an example. How do they relate to the concept of intersection? [BTL3]
8. What is the moment-generating function (MGF) of a normal distribution? State its significance. [BTL2]
9. What is a probability distribution? [BTL1]
10. Define the statistics t and F and write their sampling distributions. [BTL3]

Section B

*Answer **all**. Each question carries **6** Marks* ***(Ceiling: 36 Marks)***

11. Why standard deviation is considered to be the best measure of dispersion? [BTL3]
12. Compute Mean deviation about Median and the Co-efficient of Mean Deviation for the frequency distribution given below: [BTL3]

Size	5	8	13	20	25	30	40
Frequency	2	10	20	30	18	7	5

Turn Over

13. Find Karl Pearson's co-efficient of correlation for the following data and interpret the result. [BTL5]

Price	100	90	85	92	90	84	88	90
Sales	600	610	700	630	670	800	800	750

14. Explain the classical and axiomatic approaches to probability. [BTL2]

15. A medical test for a disease is 95% accurate. Only 1% of people have the disease. If someone tests positive, what is the chance that they actually have the disease? [BTL4]

16. A set of three similar coins are tossed 100 times with the following results: [BTL3]

Number of heads	0	1	2	3
Frequency	36	40	22	2

Fit a binomial distribution and estimate the expected frequencies.

17. The number of customer complaints received by a call center follows a Poisson distribution with an average of 4 complaints per hour. Find the probability that: [BTL5]
a) No complaints are received in an hour.
b) Exactly 3 complaints are received in an hour.
c) At least 2 complaints are received in an hour.

18. Explain the general principles of hypothesis testing. [BTL2]

Section C

*Answer **any one**. Each question carries **10** Marks* ***(1x10=10 Marks)***

19. What are the main methods of collecting primary and secondary data? Explain with examples. [BTL2]

20. For a Random Experiment of rolling two dice: [BTL4]
a. Write the Sample Space.
b. Determine the number of Sample Points where the sum of the outcomes is greater than 8.
c. Explain the importance of Sample Space in probability theory.

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