CHRIST (DEEMED TO BE UNIVERSITY),BENGALURU - 560029

End Semester Examination March/April - 2019

Bachelor of Computer Applications II SEMESTER

Code: BCA232 **Max.Marks: 100**

Course: STATISTICS II FOR BCA **Duration: 3Hrs**

SECTION A

Answer any 10 questions **10X2=20**

1 Mention any four properties of regression coefficient.

2 Write the formula for computing Karl Pearson's correlation coefficient.

3 In a bivariate data 2 is repeated thrice and 8 is repeated thrice. What is the value of the correction factor?

4 If n=10 and p=.4, what is the mean and variance of a binomial distribution?

5 If λ =.8 find the mean and variance of Poisson distribution.

6 Distinguish between probability mass function and probability density function.

7 Explain population and sample with examples.

8 Mention the number of samples that can be drawn with replacement and without replacement.

9 Write the confidence interval for difference between two means when variances are unknown.

10 Define power of a test.

11 Write the test statistic for testing single mean when variance is unknown.

12 Write the test statistic for testing the equality of two proportions.

SECTION B

Answer any 5 questions **5X6=30**

13 How is scatter diagram useful in the study of correlation? Explain with suitable diagrams.

14 It is claimed that 15% of the ducks in a particular region have patent schistome infection. Suppose that seven ducks are selected at random. Find the probabilities that

(i) at least two ducks are infected.

(ii) exactly one is infected

(iii) at most three are infected.

15 The quality control manager of Marilyn's Cookies is inspecting a batch of chocolate-chip cookies that has just been baked. If the production process is in control, the mean number of chip parts per cookie is 6.0. What is the probability that in any particular cookie being inspected

a. fewer than five chip parts will be found?

b. exactly five chip parts will be found?

c. five or more chip parts will be found?

16 The wall thickness of 35 glass 2-liter bottles was measured by a quality-control engineer. The sample mean was 4.05 millimeters, and the sample standard deviation was s = 0.08 millimeter. Find a 95% confidence interval for mean wall thickness. Interpret the interval you have obtained.

17 Two kinds of thread are being compared for strength. Fifty pieces of each type of thread are tested under similar conditions. Brand A had an average tensile strength of 78.3 kilograms with a standard deviation of 5.6 kilograms, while brand B had an average tensile strength of 87.2 kilograms with a standard deviation of 6.3 kilograms. Construct a 95% confidence interval for the difference of the population means.

18 Steve cutter sells Big-Blade lawn mowers in his hardware sort and is interested in comparing the reliability of the mowers he sells with the reliability of the Big-Blade

mowers sold nationwide. Steve knows that only 15% of all Big-Blade mowers sold nationwide require repairs during the first year of ownership. A sample of 120 of Steve's customers reveals that 22 of them required mower repairs during the first year of ownership. At level of significance 0.05,is there evidence that Big-Blade mowers differ in reliability from those sold nationwide.

SECTION C

Answer any 5 questions **5X10=50**

19 A series of questions on sports and world events was asked of a randomly selected group of young adult naturalized citizens. The results were translated into a "knowledge" score. The scores were:

Citizen	**Sports**	**World Events**
J. C. McCarthy	47	49
A. N. Baker	12	10
B. B. Beebe	62	76
L. D. Gaucet	81	92
C. A. Jones	90	86
J. N. Lopez	35	42
A. F. Nissen	61	61
L. M. Zaugg	87	75
J. B. Simon	59	86
J. Goulden	40	61
A. A. Fernandez	87	18
A. M. Carbo	16	75
A. O. Smithy	50	51
J. J. Pascal	60	61

Obtain Spearman's rank correlation coefficient.

20 For the data given below,

X	Y
72	45
73	38
75	41
76	35
77	31
78	40
79	25
80	32
80	36
81	29
82	34
83	38
84	26
85	32
86	28
88	27

a. Compute the regression coefficients of Y on X and X on Y.

b. What is the estimated value for X = 75

21 Consumers spend an average of $21 per week in cash without being aware of where it goes. Assume that the amount of cash spent without being aware of where it goes is normally distributed and that the standard deviation is $5.

a. What is the probability that a randomly selected person will spend more than $25?

b. What is the probability that a randomly selected person will spend between $10 and $20?

c. Between what two values will the middle 95% of the amounts of cash spent fall?

22 The following data represent the number of days absent per year in a population of six employees of a small company: 1 3 6 7 9 10.Assuming that you sample without replacement, select all possible samples of size 2 and construct the sampling distribution of the mean. Compute population mean. Also obtain the mean and variance of the sampling distribution of the mean.

23 Several Insurance adjusters were concerned about the unusually high repair estimates they seemed to be getting from Fosbert's U-Bet Repair Station. To test their suspicions, they brought each of eight damaged cars to Fosbert's and also to the auto repair shop of Nickle's Department Store, a concern generally regarded as reliable. They obtained the following estimates, in hundreds of dollars:

Car number	1	2	3	4	5	6	7	8
Fosbert estimate	2.1	4.5	6.3	3	1.2	5.4	7.3	9.3
Nickle estimate	2	3.8	5.9	2.8	1.3	5	6.5	8.6

At level of significance 0.01 can the adjusters conclude from their survey that Fosbert's estimates are significantly higher than Nickle's .

24 In a study to determine whether there is a relationship between bank employees' standard of dress and their professional advancement, a random samples of size n = 500 yielded the results shown in the following table.

	speed of advancement		
Standard of dress	slow	average	fast
Very well dressed	38	135	129
Well dressed	32	68	43
Poorly dressed	13	25	17

Use the 0.05 level of significance to test the null hypothesis that there is no real relationship between standard of dress and speed of professional advancement.