CHRIST DEEMED TO BE UNIVERSITY,BENGALURU - 560029

End Semester Examination September/October - 2019

Master of Computer Applications I SEMESTER

Code: MCA134 **Max.Marks: 100**

Course: PROBABILITY AND STATISTICS **Duration: 3Hrs**

SECTION A

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

1 Define data and types of data.

2 Distinguish between absolute and relative measures of dispersion.

3 For a symmetric distribution with second quartile 30 and first quartile 17, find the third quartile value.

4 The probability that a family visits a City Museum is 0.36, and the probability that a family rides on the Three Rivers Ferry is 0.47. The probability that a family does both is 0.22. What is the probability that a family rides the ferry or visits the museum?

5 Differentiate between a continuous random variable and discrete random variable.

6 Identify any two situations where Poisson distribution can be applied.

7 Explain the relation between normal distribution and standard normal distribution.

8 What is meant by Critical region? What is the importance of it in hypothesis testing?

9 Suppose the credit manager at Allen Furniture wants to determine if her store's percent of credit accounts that default on payments is below the national average of 8 percent. Help her in framing the null and alternative hypotheses.

10 Identify the test statistics used for testing equality of means when variances are unknown.

11 State the properties of correlation coefficient.

12 State the computational formula for computing total sum of squares in one way ANOVA.

SECTION B

Answer any TWO QUESTIONS **2X20=40**

13 (a) The following are the prices in rupees of a commodity at different shops in Bangalore and Hubli.

Bangalore	73	78	72	74	75	73	72	74
Hubli	75	72	74	72	76	72		

(i) Identify the city showing higher average price?

(ii) Compare the consistency of prices in both the cities and choose the stable city.

(b) Identify Karl Pearson's coefficient of skewness for the following data.

Marks Below	No. of Students
10	5
20	19
30	48
40	69
50	94
60	115
70	125
80	132
90	147
100	150

14 a) Identify the missing probability in the following distribution and then compute E (X) and V(X).

X	0	1	2	3	4
p(x)	3/8	1/4	-	3/16	1/16

b) The probability that a new marketing approach will be successful is 0.6. The probability that the expenditure for developing the approach can be kept within the original budget is 0.50. The probability that both of these objectives will be achieved is 0.30. Identify the probability that at least one of these objectives will be achieved. For the two events described above, examine whether the events are independent or dependent.

c) A man draws 2 balls from a bag containing 3 white and 5 black balls. If he is receive Rs 10/- for every white ball that he draws and Rs 7/- for every black ball, obtain his expected gain.

d) State and prove Baye's theorem.

15 (a) Plastic bags used for packing are manufactured so that the breaking strength of the bags is normally distributed with mean of 5 pounds/sq inch and a standard deviation of 1.5 pounds/sq. inch. What is the probability that bags produced have a breaking strength i. between 5 and 5.5 pounds/sq. inch? ii. between 3.2 and 4.2 pounds/sq. inch? iii. at least 3.6 pounds/sq. inch? iv. less than 3.17 pounds/sq. inch?

(b) A multiple-choice test consists of 8 questions and 3 answers to each question of which only one is correct. If a student answers each question by rolling a balanced die and checking the first answer if he gets 1 or 2, the second answer if he gets 3 or 4 and the third if he gets 5 or 6, find the probability of getting i. exactly three correct answers. ii. no correct answers iii. at least six correct answers.

SECTION C

Answer any TWO questions **2X20=40**

16 a) A test of breaking strengths of 25 rods manufactured by a company show a mean breaking strength of 7750 kg with a standard deviation of 145 kg while the manufacturer's claim is that the mean breaking strength is 8000 kg. Does the data justify the manufacturer's claim? Test at 1% level of significance.

b) Describe the test procedure for testing the equality of the means of two normal distributions when variances are known.

17 a) Describe the test procedure for testing the equality of two proportions.

b) Past experience at the Crowder Travel Agency indicated that 44 percent of those persons who wanted the agency to plan a vacation for them wanted to go to Europe. During the most recent busy season, a sampling of 1,000 plans was selected at random from the files. It was found that 480 persons wanted to go to Europe on vacation.Examine whether there been a significant shift upward in the percentage of persons who want to go to Europe? Test the .05 significance level.

c) A random sample of 500 adult residents in MARICOPA County found that 385 were in favor of increasing the highway speed limit to 70 mph, while another random sample of 400 adult residents in PIMA County found that 267 were in favor of the increased speed limit. Does the survey data indicate that there is a difference between the residents of the two counties in support of increasing

18 a) Expain the differences between one way and two way ANOVA.

b) The following table shows the life times of four batches of electric lamps (in thousand hrs). Examine is there are any differences in the life times of bulbs in different batches, observations are in thousands.

Batch 1	1.60	1.61	1.65	1.68	1.70	1.72	1.80	
Batch 2	1.58	1.64	1.64	1.70	1.75			

Batch 3	1.46	1.55	1.60	1.62	1.64	1.66	1.74	1.82
Batch 4	1.51	1.52	1.53	1.57	1.60	1.68		