D.K.M COLLEGE FOR WOMEN (AUTONOMOUS),VLR-1
DEPARTMENT OF MATHEMATICS
CLASS   : II B.sc (COMPUTER SCIENCE)
SUBJECT : STATISTICS & THEIR APPLICATIONS-II

UNIT-I   SECTION-A   2 MARKS

1. Define : Range
2. What are the merits of mean deviation?
3. Define Quartile deviation.
4. What do you understand by dispersion?
5. What is co-efficient of variation?
6. Define the range of a distribution?
7. Calculate range and its coefficient for the following data.
     200,210,208,160,220,   250.
8. How does mean deviation differ from standard deviation?
9. Calculate range and its coefficient for the following data.
10. Find the range and the coefficient of range for the following data.
     35,40,52,29,51,46,27,30,30,23.
11. Write down the merits and demerits of standard deviation?

UNIT-II

12. Write down the formula to calculate kelly's coefficient of skewness.
13. Write the various measures of skewness.
14. What is kurtosis? How it is measured?
15. What is skewness?
16. Write the formula for co-efficient of skewness based on Quartiles.
17. The difference of two Quartile is 20. Sum of the Quartile is 40. Find the first and third Quartile.
18. Define symmetric and asymmetric distribution.
19. Define Bowley's co-efficient of skewness.
20. The first four center moments of a distribution are 0, 2.5, 0.7, and 8.75. Test the skewness and kurtosis of the distribution.

21. Write down the formula for Bowley's co-efficient of skewness.

UNIT-III

22. Define binomial distribution

23. Define poisson distribution.

24. What is the mean and standard deviation of the binomial distribution.

25. A student obtained the following answer to a certain problem given to him.
    Mean=2.4; variance=3.2, for a binomial distribution comment on the result.

26. Find the expected value (mean) of the poisson distribution.

27. The mean and standard deviation of a binomial distribution are, respectively, 20
    and 4. Find the values of p, q and n.

28. Give any two uses of the normal distribution.

29. Write the formula for poisson distribution?

30. What are the main objects of fitting a normal curve?

31. Find the binomial distribution whose mean is 6 and variance 4.

32. State any properties of binomial distribution.

UNIT-IV

33. Define t-distribution.

34. Define the terms null hypothesis and alternative hypothesis.

35. Define null hypothsis

36. Mention test-statistic formula for equality of two means.

37. Two groups of students are given an intelligence test (X) and an arithmetic test(V).
    N1=45,   r=0.45.

38. What is types I error?

39. Write down the formula for the amount of annity due.

40. Find the term of a bill of Rs.18,450 whose true discount at 5% per annum is
    Rs.450.

41. Write down the uses of student t-test.

UNIT-V

42. Define ANOVA?

43. State any two uses of f-test?

44. Write any two uses of analysis of variance.

45. What is latin square?

46. Compare L.S.D & R.B.D & mention any two differences.

47. Differentiate y=ax+b/cx+b with respect to x.

48. Write down the rules determine the maximum and minium point.

49. Write down the basic principles in the design of experiment.

UNIT-I   **SECTION-B**   **5 MARKS**

50. Calculate quartile deviation and its co-efficient.

X	2	5	7	9	12
Frequency	4	7	5	3	2

51. Calculate co-efficient of rang from the following data.

Marks	0-10	10-20	20-30	30-40	40-50
No. of students	12	15	12	17	18

52. Compute S.D & co-efficient of variation from the following data.

Marks	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99
No.of students	2	6	7	12	18	13	9	7	4	2

53. Obtain the quartile deviations of the following data 20,28,40, 12,30,15,50.

54. Calculate mean deviation from median from the following data.

X	10	11	12	13	14
Y	3	12	18	12	3

55. Calculate the quartile deviation for the data given below

Below marks	0-20	20-40	40-60	60-80	80-100
No.of students	8	12	30	20	10

56. Find the S.D of the following set of observation 45, 36, 40, 37, 39, 42, 45, 35, 40,

57. Calculate the quartile deviation from the following frequency distribution

Value of the item	12	13	14	25	26	27	38	40
Frequency	2	3	5	8	7	3	2	1

UNIT-II

58. Find bowley's co-efficient of skewness for the following frequency distribution

x	0	1	2	3	4	5	6
y	7	10	16	25	18	11	8

59. For a group 20 items $\sum x_1 = 1452, \sum x_2 = 144280$ and the mode=63.7 find the pearson coefficient of skewness.

60. The first four moments of a distribution about x=2 are 1,2.5,5.5, and 1.6calculate the first four moments abut mean.

61. Calculate pearson's measure of skewness for the following data.

Size	7	8	9	10	11	12	13	14
Frequency	2	11	36	64	39	39	22	2

62. Calculate the first four moments about mean form the following data

X	2	3	4	5	6
Y	1	3	7	3	1

63. For a moderately skewed data, the arithemetic mean is 200, the co-efficient of variance is 8 and karlpearson's co-efficient of skewness is 0.3 find the mode and the median.

64.Computer coeffient of skewness based on quartiles and median from the following data.

variance	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Frequency	12	16	26	30	22	15	7	4

UNIT-III

65. Assuming that half the population is vegetarian so that the chage of an individual being a vegetarian is 1\2 and assuming that 100 investigators can take sample of 10 individuals to see whether they are vegatarians, now many investigators would you expect to report that three people or less were vegetarlans.

66. Determine the binomial distribution for which mean is 4 and variance 3. Also find p(x=15)

67. Assume the mean height of soldiers to be 68.22 inches with a variance of 10.8 inches. How many soldiers in a regiment of 1000 would be over 72 inches.

68. Fit a normal curve by the method of areas.

x	60-62	62-64	64-66	66-68	68-70

| y | 5 | 18 | 42 | 27 | 8 |

69. A coin is tossed six times. What is the probability of obtaining four or more heads?

70. In a distribution exactly normal, 7% of items are under 35 and 79% are under 63. What is the mean and standard deviation of the distribution?

71. A coin was tossed 400 times and the head turned up 216 times. Test the hypothesis that the coin is unbia sed.

72. What are the properties of the binomial distributlon?

73. Intelligence test on two groups of boy and girls gave the the following results:

	mean	S.D	N
Girls:	75	15	150
Boys:	70	20	250

74. Determine the binomial distribution for which the mean is 4 and variance 3. Also find p(x=15)

75. Find the moment generating function of poission distribution.

76. What are the proper hes of normal curve ?

77. Explain properties of poission distribution.

IV – UNIT

78. In hospital 480 female and 520 malebabies were born in a week. Do these figures confirm   the hypothes is that males and females are born in equal number?

78. Define standare error, how it is used in testing of hypothesis.

79. In a sample of 8 observations, the sum of the squared deviation of items from the mean was 94.5 in another sample of observation the value was found to be 101.7 test whether the difference is significant at 5%level.

80. The three samples below have been obtained from normal populations with equal variances. Test the hypothesis that the sample means are equal.The table value of at 5% level of sign if icance for v1=2 and v2=12 is 3.88

8	7	12
10	5	9
7	10	13
14	9	12
11	9	14

81. A random sample of 27 pairs of observations from a normal population gives a correlation coefficient 0.42 is it likely that the variables in the population are un-correlated?

82. Two random samples were drawn from two normal populations and their values are

    A 66 67 75 76 82 84 88 90 92

    B 64 66 74 78 82 85 87 92 93 95 97

Test whether the two populations have the same variance at 5%level of significance use f-test.

(for $v_1=10, v_2=8, f_{0.05}=3.36$).

83. What are the uses if t-test?

84. In an experiment, two random samples give the following results.

sample	size	mean	sum of variance of deviations from the mean
1	10	15	80
2	12	14	108

85. A randow sample of 10 days has the following

    IQ'S:70,120,110,101,88,83,95,98,107,100.

    Do these data support the assumption of a population mean IQ of 100?

86. The two random samples gave the following results.

$n_1=10, n_2=12 \sum(x_i-x)^2 = 90, \sum(y_i-y)^2=108$

Test whether the samples came from the populations with the same variable.

UNIT-V

87. Write down the ANOVA table for one wayclassification.

88. Explain one-way classification.

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SECTION-C   **10 MARKS**

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89. Find out which is more stable in value. Using co-efficient of variation.

x	35	54	52	53	56	58	52	50	51	49
y	108	107	105	105	106	107	104	103	104	101

90. Calculate mean deviation from the following series.

x	10	11	12	13	14
y	3	12	18	12	3

100. The prices of shares x and y a certain period are given below. Find out which share is more stable in value.

x	35	54	53	56	58	52	50	51	59
y	108	107	105	106	`07	104	103	104	101

101. The scores of two batsman A and B in ten inning during a certain season are

A: 32 28 47 63 71 39 10 60 96 14

B: 19 31 48 53 67 90 10 62 40 80

Find which of the two batsman is more consistent in scoring.

102. Discuss the various measures of dispersion with and merits and demerits.

103. The scores of two players A and B in 12 rounds are given blown.

A: 74 75 78 72 78 77 79 81 79 76 72 71

B: 87 84 80 88 89 85 86 82 82 79 86 80

Identify the better player and the more consistent player.

UNIT-II   SECTION-B

104. The first four central moments of distribution are 0, 2.5, 0.7 and 18.75. comment on the skewness and kurtosis of the distribution.

105. Calculate pearson's coefficient of skewness.

Variance	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Frenquency	5	6	11	21	35	30	12

106. Calculate the bowely measure of skewness for the following data.

Marks	100-120	120-140	140-160	160-180	180-200	200-220	220-240	240-260	260-280	280-300
No of students	4	10	16	29	52	80	42	23	17	7

107. Calculate karl-pearson'swefficient of skewness from the following data.

x	10-20	20-30	30-40	40-50	50-60
y	18	20	30	22	10

108. Compute the co-efficient of skewness and kurtosis based on the moments from the following data and specify the interference.

x	4.5	14.5	24.5	34.5	44.5	54.5	64.5	74.5	84.5	94.5
f	1	5	12	22	17	9	4	3	1	1

109. Calculate pearson's co-efficient of skewnes.

Variable	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	5	6	11	21	35	30	23

110. Calculate karlpearsons co-efficient of skewness.

Age	20-25	25-30	30-35	35-40	40-45	45-50	50-55
No.of men	8	12	20	25	15	12	8

111. Fit a poisson-distribution to following data.

No.of defects	0	1	2	3	4
No of units	214	92	20	3	1

112. Calculate first four moments about mean.

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	8	12	20	30	15	10	5

UNIT-III

113. In a random sample of 600 men taken from a big cities 400 are found to be smokers. In another random sample of 900 men taken from another city 450 are smokers. Do the data indicate there is a significant difference in habit of smoking in two cities?.

114. Ten coins tossed simuitaneously find the probability of getting

        a. At least seven heads

        b. Exactly seven heads

        c. At the most seven heads

115. Fit a passion distribution to the following table.

x	0	1	2	3	4
Frequency	211	90	19	5	0

116. An unbiased coin is tossed eight times and the number of heads noted. The experiment is repeated 256 times and following frequency distribution is obtained.

No of Heads	0	1	2	3	4	5	6	7	8

Frequency	2	6	30	52	67	56	32	10	1

Calculate the are tical frequencies.

UNIT-IV

117. A random sample of 27 pairs of observations from a normal population gives a correlation co-efficient of 0.42, is it likely that the variables in the population are un correlated?

118. The manufacturer of a certain make of electric bulbs clim that his bulbs have mean life of 25 months with a S.D of 5 months. The following values. Life in months:24, 26, 30, 20, 18.Coin you regard the producer's claim to valued at 1% level of significance?

119. The life times of electric bulbs for a random sample of 10 from a large consignment gave the following data

$$\text{Items:} \quad 1 \quad 2 \quad 3 \quad 4 \quad 5$$

Life in ^{1}000hours: 4.2 4.6 3.9 4.1 5.2

$$\text{Items:} \quad 6 \quad 7 \quad 8 \quad 9 \quad 10$$

Life in ^{6}000hours: 3.8 3.9 4.3 4.4 5.6

Can we accept the hypothesis that the average life time of bulbs is 400 hours?

120. The following data gives the before and after training marks.

Applying t-test and concluded that the employers have benefited by the training.

Before Training: 25 20 35 15 42 28 26 44 35 48

After training: 26 20 34 13 43 40 29 41 36 46

121. The Sales data of item in 6 shops before and after a special promotional compaign are a follow.

Shops: 1 2 3 4 5 6

Before compaign: 53 28 31 48 50 42

After: 58 29 30 55 56 45

Can be champaign be judged to be a success? Test at 5%level of significance.

122. The 10 accountants were given intensive coaching and four tests were conducted in a month. The scores of tests 1 and 4 given below.

Series no.of accountants: 1   2   3   4   5   6   7   8   9   10

Marks in 1st Test: 50   42   51   42   60   41   70   55   62   38

Marks in 4th Test: 60   40   61   52   688   51   64   63   72   50

Does the score from 1st test 4 show an improvement? Test at 5%level for one ta tail test is 1.833.

UNIT-V

123.A variable trailn was conclucted on wheat with a varieties in a latin squaredesign the plan of the   experiment and the per plot yield are given below.

c   25   B   23   A   20   D   20

A   19   D   19   C   21   B   18

B   19   A   14   D   17   C   20

D   17   C   20   B   21   A   15

Analyse data and interpret the result (subtract 20 from all the items.)

124. five doctors each test five treatments for a certain disease and observe the no.of day each taken to recover the result are as follows. (recovery time in days)discuss the difference between the doctors and the treatment.

Doctors	Treatments				
	1	2	3	4	5
A	10	14	6	19	20
B	11	15	24	17	21
C	9	12	20	16	19
D	8	13	17	17	20
E	12	15	19	15	22

125. perform a two-way ANOVA

Plots of land	Treatment			
	A	B	C	D
I	38	40	41	39
II	45	42	49	36
III	40	38	42	42

126. Set up an ANOVA table (two way) for the data given below and test the significance of difference.

States	Salesmen			
	I	II	III	IV
I	38	40	41	39
II	45	42	49	36
III	40	38	42	42

127.Setup ANOVA table for the following pernectare varieties of wheat each grown in 4 plot.

Plots of land	Varieties of wheat		
	A1	A2	A3
1	6	5	5
2	7	5	4
3	3	3	3
4	8	7	4

Also work out f-retio and test wheather there is a significance difference among the average yields in the 3 varieties of wheat.