D.K.M.COLLEGE FOR WOMEN (AUTONOMOUS), VELLORE-1.
MATHEMATICS AND STATISTICS FOR MANAGEMENT

UNIT I   SECTION-A   2-MARKS

1. Define matrix, diagonal matrix, row matrix, scalar matrix, unit matrix, null matrix, row matrix, column matrix.
2. Define symmetric matrix.
3. Define skew-symmetric matrix.
4. If

    A=   4   5   3   B=   7   2   -1
            2   4   -2   ,   6   5   4   Find A+B

and A-B.

5. If   A=   1   2   3   B=   4   2
            3   2   1   2   4
                         1   1

6. Solve for x and y
          If 2x- 3y = 2   5,   3x+2y = 7
7. Define orthogonal matrix.

SECTION –B   5 MARKS

1. If   A= 2   3   4   ,   B=   1   3   0
            1   2   3   -1   2   1   than prove that AB≠ BA.
          -1   1   2   0   0   2

2. If A =   1   2   2
            2   1   2   show that $A^2 -4A- 5I =0$.
            2   2   1

3. If find the   A=   1   2   2
                      2   1   2   Inverse of A.
                      2   2   1

4. A =   2   3   4 ,   B=   1   4   7
            5   2   1   -2   3   8   show that $(A+B)^T = A^T+B^T$
            4   6   -5   6   -3   4

5. If A =   2   2   5   B=   4   7
            5   3   -1   2   5
                        3   -2   verify $(AB)^T = B^TA^T$

SECTION-C   1O MARKS

1. Show that the matrix   A=   2   -1   1

$$\begin{array}{ccc} -1 & 2 & -1 \\ 1 & -1 & 2 \end{array}$$ Satisfies the equation

Solve the A³-6A²+9A-4I=0.

2. Find the adjoint of $\begin{array}{ccc} 3 & 1 & 2 \\ 2 & 2 & 5 \\ 4 & 1 & 0. \end{array}$

3. If A= $\begin{array}{ccc} 1 & 1 & 1 \\ 1 & 2 & -3 \\ 2 & -1 & 3 \end{array}$ Prove that A(adjA) = |A| I.

4. Find the inverse of $\begin{array}{ccc} 3 & 1 & 2 \\ 2 & 2 & 5 \\ 1 & 1 & -2. \end{array}$

5. Using Gramers rule solve the equation x+y+2z=4, 2x-y+3z=9, 3x-y-z=2.

6. Slove by matrix method 2x+4y+z=5, x+y+z=6, 2x+3y+z=6.

7. Find the inverse of the matrix by the method of reduction $\begin{array}{ccc} 1 & 2 & 3 \\ 3 & -2 & 1 \\ 4 & 2 & 1 \end{array}$

UNIT – II   SECTION-B   2 MARKS

1. Define statistics.
2. Mention any two applications of statistics.
3. Mention any two differences between tabulation & classification.
4. Write the merits and demerits of standard deviation.
5. Find the mean for the following data 110, 121, 137, 143.
6. Find the mean for the following values 30, 15, 16, 17, 31, 20, 30, 36, 11, 16, 16, 17.
7. Find the Range and co –efficient Range for 10, 11, 12, 9, 10, 17, 20, and 21.

SECTION-B   5 MARKS

1. Explain the Nature of statistics.
2. What do you mean by statistical method and explain same of the methods.
3. What are the limitations of statistics?
4. Define classification and mention the type of classification.
5. Explain: Quantitative classification.
6. What are the characteristics of good table?
7. Define diagram and mention some types of diagrammatic representation of statistical data.
8. Draw a simple bar diagram for the following data.

| Year | 1974 | 1975 | 1976 | 1977 |

	Data	40	45	44	41

9. Draw a Pie-diagram for the following data.

Food crops	Rice	Wheat	Barley	Jowar	Bajor	Maize	Others
Area	8	8	4	2	2	5	11

10. Construct histogram and frequency polygon.

weight	41 - 45	46 - 50	51 - 55	56 - 60	61 - 65	66 – 70	71 - 75	76 - 80
No of person	4	5	9	6	11	5	7	3

11. Calculate the AM for the following data.

Age in years	8	10	12	15	18
No of workers	5	7	12	6	10

12. Find the median for the following data.

X	5	10	15	20	25	30
Y	7	12	37	25	22	11

13. Find the mode of the following data.

X	46-50	51-55	56-60	61-65	66-70	71-75	76-80
Y	2	3	5	7	9	11	7

14. Find the standard deviation for the following data.

X	70-80	80-90	90-100	100-110	110-120	120-130
Y	12	18	35	42	50	45

SECTION-C   10 MARKS

1. Explain the scope of statistics in detail.
2. Explain the types of classification in detail.
3. 0045plain the tabulation and its types with example.
4. Explain types of diagrammatic representation of statistical data.
5. Draw the ogives (less than & more than) for the following data.

X	10	20	30	40	50
Y	28	20	34	30	28

6. Draw a Lorenz curve for the following data.

Amount of profits	150	160	600	840	1050	1500	1700
No of companies	28	20	34	30	28	26	22

7. Find the mean, median, mode, for the following data and verify empirical relation.

Class	1-10	11-20	21-30	31-40	41-50	51-60	61-70
Frequency	3	7	13	17	12	10	8

8. Find standard deviation and co- efficient of variation.

Height	126-130	131-135	136-140	141-145	146-150	\
	151 -155	156 –160				

No of boys	31	44	48	51	60
55	43				

UNIT – III   SECTION-A   2 MARKS

1. Define correlation.
2. Define rank correlation.
3. Write the co-efficient of correlation formula for the continuous interval.
4. Mention the properties of correlation co-efficient.
5. Write any two limitations of correlation co-efficient.
6. What is regression.

SECTION-B   5 MARKS

1. Find the co- efficient of correlation between x and y

X	1	2	3	4	5	6	7	8	9
Y	12	11	13	15	14	17	16	19	18

2. The following are the rank obtained by 10 students in statistics and mathematics.

Statistics	1	2	3	4	5	6	7	8	9	10
Mathematics	1	4	2	5	3	9	7	10	6	8

To what extent is the knowledge of students in the two subjects related.

3. Find the co- efficient of correlation for the following data.

X	35	40	60	79	83	95
Y	17	28	30	32	38	49

4. Obtain the regression line of Y on X for the following data.

X	1	2	3	4	5	6	7	8	9
Y	9	8	10	12	11	13	14	16	15

5. Obtain the two regression lines from the given data. $n=70$, $\sum x=80$, $\sum y=60$, $\sum x^2=1680$, $\sum y^2=320$, $\sum xy= 480$.

10 MARKS:

1. The height and weight of a random sample of 8 adult males are shown in the following data.

Height	177	163	173	182	171	168	174
184							
Weight	71	67	77	85	69	62	73
80							

   i.   Calculate the co- efficient of correlation.
   ii.   Find the regression line   X on Y.
   iii.   Find the regression line y on x

2. Calculate Karl Pearson's co- efficient of correlation for the following data, using 20 as the working man for the price and 70 as the working mean for demand.

Price	14	16	17	18	19	20	21	22	23
Demand	84	78	70	75	66	67	62	58	60

3. Calculate the rank correlation co-efficient for the following data.

X	92	89	87	86	86	77	71	63	53	50
Y	86	78	91	77	68	85	52	82	37	57

UNIT – IV   SECTION-A   2 MARKS

1. Define t-test, f- test and x2 test.
2. Write the uses of t-test
3. What are properties of sampling distribution of t
4. Write any two uses of x2 -test

SECTION-B   5 MARKS

1. A machine produced 20 defective article in a batch of 400 after over harling it produced 10 defectives in a batch of 300 has the madine improved
2. A filling machine is expected to fill 5kg of powder in to bags a sample of 10 bags gave the 4.9,4.9,5.0,5.1,5.4,5.2,4.6,5.1,4.6 and 4.7 test whether the machine working properly
3. A IQ test was administrated to 5 persons

. Candidates	1	2	3	4	5
IQ before training	110	120	123	132	125
IQ after training	120	118	125	136	121

   1. Test whether there is any change in IQ after training
4. In 120 throws of single die ,the following distribution of faces was observed

Face	1	2	3	4	5	6
frequency	30	25	18	10	22	15

SECTION-C   10 Marks

1. A set of 5 identical coins is tossed 320 times and the no of heads appealing each time recorded

No of	0	1	2	3	4	5

heads						
frequency	14	45	80	112	61	8

Test whether the coins are unbiased at 5% level of significance

2. Value of a variant two sample are given

Sample 1	5	6	8	1	12	4	3	9
Sample 2	2	3	6	8	1	10	2	8

Test the significance of the difference between the two sample manes and the tow sample variance

3. From the following data obtained from a sample of 100 people, calculate the standard error of the mean.

Earning	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
No of person	50	100	150	200	200	100	100	100

If the average of population is 42, what is your conclusion about the reliability of the sample?

UNIT – V   SECTION-A   2 MARKS

1. Define ANOVA
2. What is the difference between one-way ANOVA and two –way ANOVA
3. What are the two types of ANOVA

SECTION-B   5 MARKS

1. What are the steps involved in one-way ANOVE
2. What are steps involved in two –way ANOVE
3. Write a short notes on ANOVE
4. What are the characteristics of ANOVE table

SECTION-C   10 MARKS

1. Analysis of variance explain in detail
2. Set up ANOVE of one –way for the following data

A	B	C
20	18	25
21	20	28
23	17	22
16	15	38
20	25	32

3. Set up two –way ANOVE for the following data treatment.

Plots of land	A	B	C	D
1.	38	40	41	39
2.	45	42	49	36
3.	40	38	42	42

Use coding method; subtract 40 from the given numbers