



- (i) How many elements are in the above data set?
- (ii) How many variables are in this data set?
- (iii) How many observations are in this data set?
- (iv) Which variables are qualitative and which are quantitative variables?
- (v) What measurement scale is used for each variable?

Or

- (b) The weights of the contents of cans of tomato sauce produced by a company are normally distributed with a mean of 8 ounces and a standard deviation of 0.2 ounces.
  - (i) What percentage of all cans produced contain more than 8.4 ounces of tomato paste?
  - (ii) What percentage of all cans produced contain less than 7.8 ounces?
  - (iii) What percentage of cans contains between 7.4 and 8.2 ounces?
  - (iv) Ninety-five percent of cans will contain at least how many ounces?
  - (v) What percentage of cans contains between 8.2 and 8.4 ounces?

Unit - 1  
Normal  
Distribution

Unit 2

- 12. (a) Elaborate on the probability and non-probability sampling techniques.

Or

- (b) An automobile dealer wants to estimate the proportion of customers who still own the cars they purchased 5 years earlier. A random sample of 200 customers selected from the automobile dealer's records indicates that 82 still own cars that were purchased 5 years earlier.
  - (i) Set up a 95% confidence interval estimate of the population proportion of all customers who still own the cars 5 years after they were purchased.
  - (ii) How can the results in (i) be used by the automobile dealer to study satisfaction with cars purchased at the dealership?

Unit 2

- 13. (a) Confirmed cases of West Nile virus in birds for a sample of six countries in the state of Georgia are shown below :

Country	Cases
Catoosa	6
Chattooga	3
Dade	3
Gordon	5
Murray	3
Walker	4

Unit - 3

You want to determine if the average number of cases of West Nile virus in the state of Georgia is significantly more than 3. Assume the population is normally distributed.

- (i) State the null and the alternative hypothesis.
- (ii) Compute the mean and the standard deviation of the sample.
- (iii) Compute the standard error of the mean.
- (iv) Determine the test statistic.

Or

- (b) Random samples of employees from three different departments of MNM Corporation showed the following yearly incomes (in \$1,000) :

*Unit 3  
One way classification*

	Department A	Department B	Department C
	40	46	46
	37	41	40
	43	43	41
	41	33	48
	35	41	39
	38	42	44

At  $\alpha = .05$ , test to determine if there is a significant difference among the average incomes of the employees from the three departments. Use both the critical and  $p$ -value approaches.

14. (a) A survey of male and female students showed the following ranking of 12 professors in the management department :

*Unit - 5*

Professor	Ranking By Female Students	Ranking By Male Students
1	7	8
2	8	7
3	1	2
4	2	3
5	9	1
6	3	10
7	10	9
8	11	4
9	4	6
10	6	11
11	12	5
12	5	12

Do the rankings given by the female students agree with the rankings given by the male students? Use  $\alpha = 0.05$ .

Or

- (b) The manager of a company believes that differences in sales performance depends upon the salesperson's age. Independent samples of salespeople were taken and their weekly sales record is reported below :

Below 30 years	Between 30 and 45 years	Over 45 years
No. of Sales	No. of Sales	No. of Sales
24	23	30
16	17	20
21	22	23
15	25	25
19	18	34
26	29	36
	27	28

- (i) State the null and alternative hypotheses. (2)
- (ii) At 95% confidence, test the hypotheses. (14)
15. (a) Given below are four observations collected in a regression study on two variables  $x$  (independent variable) and  $y$  (dependent variable) :

$x$	$y$
2	4
6	7
9	8
9	9

- (i) Develop the least squares estimated regression equation. (10)
- (ii) Compute the coefficient of determination. (6)

Or

- (b) You are given the following information regarding four items :

Item	2000		2006	
	Price	Quantity	Price	Quantity
A	\$2.00	3	\$5.75	8
B	0.80	20	1.25	10
C	22.00	4	35.00	3
D	7.00	2	15.00	1

- (i) Calculate the price relative index for each item, using 2000 as the base year. (3)
- (ii) Calculate the unweighted aggregate price index. (3)
- (iii) Calculate a Laspeyres index. (3)
- (iv) Calculate a Paasche index. (3)
- (v) Construct a weighted aggregate quantity index using 2000 as the base year and price as the weight. (4)

