Code No: 741AD

R17

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
MBA I Semester Examinations, December - 2018
BUSINESS STATISTICS

Time: 3hours   Max.Marks:75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A   5 × 5 Marks = 25

1.a) Briefly explain the role of statistics in managerial functions. [5]

 b) Write the formulas of Quartile Deviation for individual / desecrate data / continuous data and explain the usefulness of Q.D. [5]

 c) In a small town the total car colour are red 55, white 18, green 10, yellow 15, others 12. Show the above data in a Pie-Chart. [5]

 d) What differences do you find in one way ANOVA and Two way ANOVA and suggest the circumstances in which we use one way ANOVA. [5]

 e) Find the sales values for the year 2012 using free hand graphic method.

Year:	2007	2008	2009	2010	2011
Sales:	15	16	15	17	18

(in 1000's) [5]

PART - B   5 × 10 Marks = 50

2.a) In 2017 Mumbai produced 330 gms of solid waste per person.

i) Does this mean every single Mumbaites produced the same amount of garbage? Explain briefly the meaning of this statement.

ii) Was the number 330 gms obtained from a sample? Explain.

iii) To verify this statement by sampling how would you select a sample?

 b) The following are the number of passengers on the minibus tour of Phalke Memorial in Nasik.

8, 12, 10, 11, 11, 7, 12, 6, 11, 4, 10, 10, 11, 9, 10, 7, 10, 8, 8, 9, 8, 9, 11, 9, 8, 6, 10, 6, 8, 11

i) Find the sample mean, median and variance.

ii) Comment on the distribution. [5+5]

OR

3.a) Of the Rs. 20.7 Crore raised by a major University's fund drive, Rs. 11.7 Crore came from individuals and charity programs, Rs. 2.4 Crore from industry and business and Rs.6.6 Crore from foundations and associations. Present this information in form of a pie chart.

 b) The following measurements of the diameters (in feet) of Indian mounds in southern Wisconsin were gathered by examining reports in Wisconsin Archaeologist.

22, 24, 24, 30, 22, 20, 28, 30, 24, 34, 36, 15, 37

i) Create a dot diagram.

ii) Calculate the mean and median and then mark these on the dot diagram.

iii) Calculate the quartiles. [5+5]

4. The 50 measurements of acid rain in a polluted city are as below:

3.58	3.80	4.01	4.01	4.05	4.05	4.12	4.18	4.20	4.21
4.27	4.28	4.30	4.32	4.33	4.35	4.35	4.41	4.42	4.45
4.45	4.50	4.50	4.50	4.50	4.51	4.52	4.52	4.52	4.57
4.58	4.60	4.61	4.61	4.62	4.62	4.65	4.70	4.70	4.70
4.70	4.72	4.78	4.78	4.80	5.07	5.20	5.26	5.41	5.48

    a) Calculate the Median and Quartiles.
    b) Find 90th percentile.
    c) Determine the Mean and Standard Deviation.
    d) Display the data in the form of a boxplot.   [10]

OR

5.a) On opening day one season, 10 major league baseball games were played and they lasted the following number of minutes.
    167   211   187   176   170   158   198   218 145 232
    i) Find the sample median.
    ii) Find sample mean.
    iii) Find Sample variance and standard deviation,
  b) Write the process of calculating Spearman Rank Correlation when three items in each set repeated three times. Then find the Correlation Value (CV).   [5+5]

6. A survey was conducted to study the attitudes of the faculty, academic staff, and students in regard to a proposed measure for reducing the heating and air-conditioning expenses on campus.

	Favor	Indifferent	Opposed	Total
Faculty	36	42	122	200
Academic Staff	44	77	129	250
Students	106	178	116	400
Total	186	297	367	850

a) What is the probability that a randomly selected person is a student, an academic staff and a faculty?
b) What is the probability that a randomly selected person is opposed to the proposed measure?
c) Given that the person is indifferent, what is the probability that the randomly selected person is faculty?
d) What is the probability that a randomly selected person is academic staff and he/she is opposed to the proposed measure?   [10]

OR

7. A manufacturer of tablets encountered a shortage of LED screens. Shipment from the usual supplier had 4% defective screens. Because of shortage, the manufacturer had to obtain 20% of the screens from a second supplier whose consignment has 7% defective screens, and 15% from a third supplier who sent 10% defective screens. Find the
a) Probability that an incoming LED screen will be defective.
b) Probability that a defective LED screen was sent by the second supplier.   [10]

8. The following table shows data for the Randomized Block Design for two factors A and B with no interaction.

	Factor A			
Factor B	A1	A2	A3	A4
B1	2	3	2	4
B2	6	5	7	6
B3	8	10	9	10

a) State model with proper assumptions.
b) Set up ANOVA and test appropriate hypotheses.   [5+5]

OR

9.a) Consider the following sample data:

X	22	24	27	21	23	14	14	15
Y	101	139	250	88	87	14	16	20

i) Construct a scatterplot and verify that estimating a simple linear regression is appropriate in this problem.
ii) Calculate b_0 and b_1, what is the simple regression equation with assumptions.

b) In a multiple regression, the following sample regression equation is obtained.
$$\hat{y} = 152 + 12.9x_1 + 2.7x_2$$
i) Predict y if x_1 equals 20 and x_2 equals 35.
ii) Interpret the slope coefficient of x_2.   [5+5]

10. Consider the following table, consisting of 20 observations of the variable y and t.

T	y	t	y	t	y	t	y
1	10.32	6	13.84	11	16.95	16	16.26
2	12.25	7	14.39	12	16.18	17	16.77
3	12.31	8	14.40	13	17.22	18	17.10
4	13.00	9	15.05	14	16.71	19	16.91
5	13.15	10	14.99	15	16.64	20	16.79

a) Plot the series along with superimposed linear and quadratic trends. Which trend model do you describe the data well?
b) Estimate a linear trend model and quadratic trend model. Validate your guess from the graphs by comparing their adjusted R^2.   [10]

OR

11. Find three yearly moving average and five yearly moving average for the following data and find the Trend values.

1990	91	92	93	94	95	96	97	98	99
5	8	10	15	18	20	21	20	22	24

And also estimate the Trend value for 2001.   [10]

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