

Master's Degree Examination – November 2018
Semester - I

Class : I PG
Major : Mathematics

Time: 3 hours
Max. Marks: 60

17MMAC06 – MATHEMATICAL STATISTICS-I

Part A

10 x 1/2 = 5

Choose the correct answer

- Data originally collected for an investigation is known as-----
a) Tabulation b) primary data c) secondary data d) published data
- The collected data in any statistical investigation are known as-----
a) Raw data b) arranged data c) classified data d) tabulated data
- The total of the values of the items divided by their number of items is known as -----
a) Median b) Arithmetic mean c) mode d) range
- Which one of the following is relative measure of dispersion?
a) Range b) Q.D c) S.D d) coefficient of variation
- The square of the S.D is -----
a) variance b) coefficient of variation c) square of variance
d) square of coefficient of variation
- The standard deviation is 5.79 and arithmetic mean is 131. Find coefficient of variation.
a) 4.42% b) 5.45% c) 6.32% d) 2.34%
- While drawing a scatter diagram if all points appear to form a straight line getting Downward from left to right, then it is inferred that there is -----.
a) Perfect positive correlation b) simple positive correlation
c) Perfect negative correlation d) no correlation
- If the correlation coefficient between two variables X and Y is negative, then the Regression coefficient of Y on X is -----.
a) Positive b) negative c) not certain d) zero
- Rank correlation was discovered by -----
a) R.A.Fisher b) Sir Francis Galton c) Karl Pearson d) Spearman
- For Anova, MST stands for.....
a) Mean sum of squares of treatment b) Mean sum of squares of varieties
c) Mean sum of squares of tables d) Mean sum of sources of treatment

Part B
Answer ALL questions

5 x 4 = 20

11. a. Define classification and illustrate the types of classification.
(or)

b. Describe the components (parts) of Table with an example.

12. a. Relate the Mean, Standard Deviation and Coefficient of Variance for the given below data set.

X	10	12	14	16	18	20	22	24	26	28
f	3	5	7	12	15	12	11	10	6	5

(or)

b. Calculate the Mean for the following Continuous Frequency Distribution.

Hourly Wages (in Rs.)	40 - 50	50 - 60	60 - 70	70 - 80	80 - 90	90 - 100
Number of Employees	10	20	15	30	15	10

13. a. Marks obtained by 7 students in Accountancy (X) and Statistics (Y) are given below.
Compute Rank Correlation Coefficient.

X	15	20	28	12	40	60	20
Y	40	30	50	30	20	10	30

(or)

b. The heights of Fathers (X) and their Sons (Y) are given below. Inspect Spearman's Rank Correlation Coefficient.

X	180	155	170	174	160	172	166
Y	170	165	180	180	164	169	170

14. a. Explain the concept of Regression. Why should there be in general two lines of Regression for Bivariate distribution?

(or)

b. Evaluate the correlation co-efficient(r) from the following data:

X	-3	-2	-1	0	1	2	3
Y = X ²	9	4	1	0	1	4	9

15.a. Demonstrate one-way classification in ANOVA .

(or)

b. Formulate : The following data is given:

Types of Animals	Number of animals	Average Domestic animals	Standard Deviation
Dogs	5	12	2
Cats	5	16	1
Hamsters	5	20	4

Calculate the Anova coefficient.

Part C
Answer ALL questions

5 x 7 = 35

16. a. Distinguish between classification and tabulation.

(or)

b. Judge different methods of classifications.

17.a. Calculate Mean and Standard Deviation for the information given below about the weekly wages of workers.

Hourly Wages (in Rs.)	40 - 50	50 - 60	60 - 70	70 - 80	80 - 90	90 - 100
Number of Workers	10	20	15	30	15	10

(or)

b. Analyse the Standard Deviation and Coefficient of Variance for the following data.

Class Interval	351 - 500	501 - 650	651 - 800	801 - 950	951 - 1100
Frequency	21	25	30	20	15

18.a . The ranks of ten students in Economics and Statistics subjects are as follows:

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

Calculate Spearman's Rank Correlation Coefficient.

(or)

b . Explain the different methods to calculating correlation coefficient between Two Variables?

19. a. From the data given below find the two Regression Equations.

X	10	12	13	12	16	15
Y	40	38	43	45	37	43

i) Estimate Y when X = 20.

ii) Estimate X when Y = 25.

(or)

b . Regression and Correlation Analysis are statistical tools which used properly, can significantly help in decision making. Briefly explain the properties of the regression coefficients.

20. a. Criticise the technique of analysis of variances for a two way classification and compare one and two ways ?

(or)

b. Suppose that 100 tires made by a certain manufacturer lasted on the average 21819 miles with a standard deviation of 1295 miles , testing the null hypothesis $\mu = 22000$ miles against hypothesis $\mu < 22000$ miles at the 0.05 level of significance.

40 - 50	50 - 60	60 - 70	70 - 80	80 - 90	90 - 100
10	20	15	30	15	10

Class Interval	501 - 600	601 - 700	701 - 800	801 - 900	901 - 1000
Frequency	21	25	30	20	15

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

X	10	15	13	12	16	15
Y	40	38	43	45	37	43