

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION MAY 2023
(Second Semester)

Branch – COSTUME DESIGN AND FASHION

RESEARCH METHODOLOGY AND STATISTICS

Time: Three Hours

Maximum: 50 Marks

SECTION – A (5 MARKS)

Answer ALL Questions

ALL Questions Carry EQUAL Marks (5 × 1 = 5)

- Increasing the sample size has the following effect upon the sampling error is
(i) It increases the sampling error (ii) It reduces the sampling error
(iii) It has no effect on the sampling error (iv) It has no error
- Which of the following is a measure of central value?
(i) Median (ii) Standard Deviation
(iii) Mean Deviation (iv) Quartile Deviation
- If $\rho = 0$, the angle between the lines of regression is _____.
(i) Zero degree (ii) Forty Five Degree
(iii) Sixty Degree (iv) Ninety Degree
- The mean difference between 9 paired observations is 15 and the standard deviation of difference is 5. The value of statistics-t is _____.
(i) 27 (ii) 3
(iii) 9 (iv) 0
- Kruskal-Wallis analysis of data is meant for _____.
(i) one way classification (ii) two way classification
(iii) multiple way classification (iv) no way classification

SECTION – B (15 MARKS)

Answer ALL Questions

ALL Questions Carry EQUAL Marks (5 × 3 = 15)

- (a) Narrate the meaning of research and its objectives.
(OR)
(b) Sketch the various methods of collecting primary data.
- (a) Outline the components of tables.
(OR)
(b) Calculate quartile deviation and its coefficient for the following data:

Ages in Years	20	30	40	50	60	70	80
No. of Persons	3	60	130	153	140	50	3
- (a) Distinguish between correlation and regression.
(OR)
(b) Describe in details about scatter diagram and its types.
- (a) Summarize the general procedure for testing of hypothesis.
(OR)
(b) An examination was given to two classes consisting of 40 and 50 students respectively. In the first class the mean mark was 74 with a standard deviation of 8, while in the second class the mean mark was 78 with a standard deviation of 7. Is there a significant difference between the performances of the two classes at a level of significance of 0.05?

Cont...

10. (a) 1000 students at college level were graded according to their I.Q and the economic conditions of their homes. Use chi-square test to find out whether there is any association between economic condition at home and I.Q. Given $\chi_{0.05}^2 = 3.84$.

Economic Condition	IQ		Total
	High	Low	
Rich	460	140	600
Poor	240	160	400
Total	700	300	1000

(OR)

- (b) Explain the details of non parametric test and state its different types.

SECTION - C (30 MARKS)

Answer ALL Questions

ALL Questions Carry EQUAL Marks (5 × 6 = 30)

11. (a) Elucidate the types and significance of the research.

(OR)

- (b) Discuss the various sampling methods.

12. (a) Summarize the various types of classification.

(OR)

- (b) Find mean, median and mode from the following frequency distribution.

Wage (in Rs)	No. of Workers	Wage (in Rs)	No. of Workers
Less than 10	15	Less than 50	96
Less than 20	35	Less than 60	127
Less than 30	60	Less than 70	198
Less than 40	84	Less than 80	250

13. (a) Calculate Spearman's Rank Correlation Coefficient from the following Data.

X	48	33	40	9	16	16	65	24	16	57
Y	13	13	24	6	15	4	20	9	6	19

(OR)

- (b) Find Regression line equations from the following data.

X	6	2	10	4	8
Y	9	11	5	8	7

14. (a) Two types of drugs were used on 5 and 7 patients for reducing their weights. Drug A was imported and drug B indigenous. The decrease in the weight after using the drug for six months was as follows:

Drug A	10	12	13	11	14		
Drug B	8	9	12	14	15	10	9

(OR)

- (b) Discuss about t-test for single mean and two means.

15. (a) Two samples are drawn from normal population. From the following data, test whether the two samples have the same variances at 5% level:

Sample 1	60	65	71	74	76	82	85	87		
Sample 2	61	66	67	85	78	63	85	86	88	91

(OR)

- (b) A company's trainees are randomly assigned to groups which are taught a certain industrial inspection procedure by three different methods. At the end of the instructing period they are tested for inspection performance quality. The following are their scores.

Method A:	80	83	79	85	90	68	
Method B:	82	84	60	72	86	67	91
Method C:	93	65	77	78	88		

Use the Kruskal-Wallis test to determine at the 0.05 level of significance whether the three methods are equally effective.