

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc(SS) DEGREE EXAMINATION MAY 2023
(Third Semester)

Branch – SOFTWARE SYSTEMS (Five years Integrated)

STATISTICAL METHODS

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry EQUAL marks (10 x 1 = 10)

- 1 Diagrams and graphs are tools of
 - (i) Collection of data
 - (ii) Analysis of data
 - (iii) Presentation of data
 - (iv) Collecting and Analyzing of data
- 2 When mean is 79 and variance is 64, the coefficient of variation is
 - (i) 8 %
 - (ii) 81.012 %
 - (iii) 0.6745 %
 - (iv) 10.126 %
- 3 When the coefficient of skewness is zero, the frequency curve is
 - (i) U shaped
 - (ii) J shaped
 - (iii) Bell shaped
 - (iv) O shaped
- 4 If the regression coefficient of X on Y is 0.37 and the regression coefficient of Y on X is 2.24, then the correlation coefficient is
 - (i) 0.8
 - (ii) 0.91
 - (iii) 0.5798
 - (iv) 0.902
- 5 If 95% confidence limits for population mean are 20g and 25g then the confidence level that the populations mean μ lies between 20g and 25g is:
 - (i) 0.95
 - (ii) 0.01
 - (iii) 1
 - (iv) 99
- 6 Student t test was discovered by:
 - (i) Karl Pearson
 - (ii) Laplace
 - (iii) Fisher
 - (iv) W.S.Gosset
- 7 Analysis of variance is a statistical method of comparing the _____ of several populations.
 - (i) Standard deviations
 - (ii) Variances
 - (iii) Means
 - (iv) Proportions
- 8 When testing for randomness, we can use
 - (i) Mann-Whitney U test
 - (ii) Sign test
 - (iii) Runs test
 - (iv) None of these

Cont...

9 Functions in MS Excel must begin with

- (i) An () Sign (ii) An Equal Sign
(iii) A Plus Sign (iv) A > Sign

10 What type of chart is useful for comparing parts of a whole?

- (i) Pie Chart (ii) Column Chart
(iii) Line Chart (iv) Dot Graph

SECTION - B (35 Marks)

Answer **ALL** Questions

ALL Questions Carry **EQUAL** Marks

(5 x 7 = 35)

11 a Draw a pie diagram to the following schedule.

Items of expenditure	Agriculture	Co - operation	Power	Industries	Transport	Welfare	Other Items
Value (Rs. In Lakhs)	2122	330	4083	880	618	3575	55

OR

b Determine Quartile Deviation and its coefficient of QD from the following data:

Daily Wages (Rs.)	35 - 36	36 - 37	37 - 38	38 - 39	39 - 40	40 - 41	41 - 42
No. of Wage Earners	14	20	42	54	45	21	8

12 a Calculate correlation coefficient for the following data:

Marks in Mathematics (X)	25	28	35	32	31	36	29	38	34	32
Marks in Statistics (Y)	43	46	49	41	36	32	31	30	33	39

OR

b Calculate Karl Pearson's co-efficient of skewness:

Price	80 - 90	90 - 100	100 - 110	110 - 120	120 - 130
Frequency	11	29	18	7	5

13 a Explain the testing procedure for difference of two proportion test.

OR

b Ten persons were appointed in an officer cadre in an office. Their performance was noted by giving a test and the marks were recorded out of 100. They were given 4 months training and a test was held and marks were recorded out of 100.

Employee	A	B	C	D	E	F	G	H	I	J
Before training	80	76	92	60	70	56	74	56	70	56
After training	84	70	96	80	70	52	84	72	72	50

By applying appropriate test, can it be conclude that the employees have benefited by the training?

Cont...

14 a The following table gives the number of good and bad parts produced by each of three shifts in a factory.

Shifts	Good	Bad	Total
Day	900	130	1030
Evening	700	170	870
Night	400	200	600
Total	2000	500	2500

Is there any association between the shift and the equality of parts produced?

OR

b 40 people were selected at random in the following order.

M,M,F,F,F,F,M,F,F,M,M,F,M,M,M,M,F,F,M,M,F,M,F,F,M,M,M,M,F,F,M,F,M,M,
F,F,M,M,M,F

Assuming the population has 50% men and 50% women. Is true that people were selected at random?

15 a Explain in detail about how to perform simple and multiple bar diagram using MS Excel.

OR

b Explain the computation procedure to find correlation between two variables using MS Excel.

SECTION - C (30 Marks)

Answer any **THREE** Questions

ALL Questions Carry **EQUAL** Marks

(3 x 10 = 30)

16 The following data explains the overtime work done by 100 employees of a company. Calculate mean, median and mode.

Overtime hours	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50
No. of employees	5	11	35	15	14	11	6	3

17 From the following data obtain the two regression equations:

Expenditure	23	27	35	38	31	36	39	38	44	42
Sales	33	46	39	41	46	32	31	40	33	49

Also find the most likely value of sales when expenditure is 30.

18 The mean height of six randomly chosen soldiers are in inches 70, 76, 68, 69, 69, 68. Those of six randomly chosen sailors mean heights are 68, 64, 65, 69, 72, 64. Discuss in the mean height of these data. Test at 5% level.

19 Four machines A, B, C and D are used to produce a certain kind of cotton fabrics. Samples of size 4 with each unit as 10 square metres are selected from the outputs of the machines at random, and the number of flaws in each 100 square metres are counted, with the following results.

	A	B	C	D
8	6	14	20	
9	8	12	22	
11	10	18	25	
12	4	9	23	

Cont...

Q. NO 19 Cont....

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Do you think that there is a significance difference in the performance of the four machines?

20 Explain the procedure of computing regression and ANOVA using MS Excel.

Z-Z-Z

END