

PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2023  
(Second Semester)

Branch: COMPUTER SCIENCE

STATISTICS FOR COMPUTER SCIENCE

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(5 x 1 = 5)

1. If each group consists of one observation only, the value of correlation ratio is \_\_\_\_\_  
(i) 0            (ii) 1            (iii) between 0 and 1            (iv) between -1 and 1
2. Classical probability is possible in case of  
(i) unequally outcomes            (ii) equally outcomes  
(iii) either unequally or equally outcomes            (iv) all the above
3. A family of parametric distribution in which mean is equal to variance is  
(i) Binomial distribution            (ii) Normal distribution  
(iii) Poisson distribution            (iv) Gamma distribution
4. Equality of several normal population means can be tested by  
(i) Bartlett's test            (ii) F-test            (iii) Chi-square test            (iv) Student's t test
5. The range of Chi-square statistic is  
(i) -1 to +1            (ii)  $-\infty$  to  $+\infty$             (iii) 0 to  $\infty$             (iv) 0 to 1

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

6. a Explain the types of correlation.  
OR  
b Describe the two regression lines.
7. a State the addition and multiplication theorems of probability.  
OR  
b If  $P(A) = 0.37$ ,  $P(B) = 0.42$ ,  $P(A \cap B) = 0.09$  then find  $P(A \cup B)$ .
8. a Write the properties of Binomial distribution.  
OR  
b Write any three applications of Uniform distribution.
9. a Explain that type I and type II errors.  
OR  
b Describe that paired t-test.
10. a State the chi square test for goodness of fit.  
OR  
b Give the assumptions for ANOVA test.

Cont...

**SECTION -C (30 Marks)**

Answer ALL questions

ALL questions carry EQUAL Marks (5 x 6 = 30)

11. a From the following data calculate the coefficient of rank correlation between X and Y.

X	36	56	20	65	42	33	44	50	15	60
Y	50	35	70	25	58	75	60	45	80	38

OR

- b. From the following table calculate the correlation coefficient by Karl Pearson's method.

X	60	62	64	66	68	70	72
Y	61	63	63	63	64	65	67

12. a A bag contains 30 balls numbered from 1 to 30. One ball is drawn at random. Find the probability that the number of the ball is drawn will be multiple of (a) 5 or 7

OR

- b An urn contains 20 red and 10 blue balls. Two balls are drawn from a bag one after the other without replacement. What is the probability that both the balls are drawn are red?

13. a Let X be a random variable with the following probability distribution

X	-3	6	9
P(X=x)	1/6	1/2	1/3

Find  $E(X)$  and  $E(X^2)$ , and using the laws of expectation, evaluate  $E(2X+1)^2$ .

OR

- b Write the properties of Normal distribution.

14. a Describe the procedure for testing of hypothesis.

OR

- b A sample of 26 bulbs gives a mean life of 990 hours with a S.D of 20 hours. The manufacturer claims that the mean life of bulbs is 1000 hours. Is the sample not up to the standard? Test whether 5% level of significance.

15. a Based on information on 1,000 randomly selected fields about the tenancy status of the cultivation of these fields and use the fertilizers, collected in agro economic survey, the following classification was noted:

	Owned	Rented	Total
Using fertilizers	416	184	600
Not Using fertilizers	64	336	400
Total	480	520	1000

Carryout Chi-square test as per testing procedure (for 5% value of  $\chi^2$  for one degree of freedom=3.84)

OR

- b Describe that one-way classification with lay out.

Z-Z-Z

END