

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2022
(Second Semester)

Branch – COMPUTER SCIENCE WITH DATA ANALYTICS

PROBABILITY AND STATISTICS

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks (5 x 1 = 5)

- The co-efficient of correlation is not affected by _____.
(i) Change of origin (ii) Change of scale
(iii) Both origin and scale (iv) None of the above
- The word 'statistics' is used as _____.
(i) Singular (ii) Plural
(iii) Singular and Plural (iv) None of the above.
- An unbiased coin is tossed once. What is the probability of getting head?
(i) $\frac{1}{2}$ (ii) $\frac{1}{3}$ (iii) $\frac{1}{4}$ (iv) $\frac{1}{6}$
- Goodness of fit of a distribution is tested by _____.
(i) t - test (ii) F test (iii) chi-square test (iv) z test.
- The _____ sum of squares measures the variability of the observed values around their respective treatment means.
(i) treatment (ii) error (iii) Interaction (iv) total.

SECTION - B (15 Marks)

Answer ALL Questions

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

6. a) Write the difference between the Diagrams and Graphs.

(OR)

- b) Construct Histogram, Frequency polygon and frequency curve for the following data:

Interval	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90
Frequency	4	6	7	14	16	14	8	16	5

7. a) Find the rank correlation coefficient for the percentage of marks secured by a group of 8 students in Accountancy and Statistics.

Marks in Accountancy	50	60	65	70	75	40	70	80
Marks in Statistics	80	71	60	75	90	82	70	50

(OR)

- b) State the properties of Regression.

8. 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 drawn will be a multiple of a) 5 or 7 b) 3 or 7.

(OR)

- b) State the properties of the Normal Distribution.

Cont...

9. a) A wholesaler in apples claims that only 4% of the apples supplied by him are defective. A random sample of 600 apples contained 36 defective apples. Test the claim of the wholesaler.

(OR)

- b) Explain the procedure for testing the significance of two proportions.

10. a) Explain the procedure for testing the significance of two variances.

(OR)

- b) In a sample of 8 observations, the sum of squared deviations of items from the mean was 94.5. In another sample of 10 observations, the value was found to be 101. Test whether the difference is significant at 5% level.

SECTION -C (30 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 6 = 30)

11. a) Determine the mean and median for the following data:

Interval	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	18	41	90	131	140	54	15

(OR)

- b) Following are the marks obtained by two students A and B in 10 sets of examinations. If the consistency of performance is the criterion for awarding the prize, who shall get the prize.

X	44	80	76	48	52	72	68	56	60	64
Y	48	75	54	60	63	69	72	51	57	56

12. a) Compute the Correlation coefficient between X – Advertisement expenditure and Y- Sales:

X	10	12	18	8	13	20	22	15	5	17
Y	88	90	94	86	87	92	96	94	88	85

(OR)

- b) Obtain the two the two Regression equations from the following data also estimate Value of Y when X=20.

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

13. a) A box contains 3 red and 7 white balls. One ball is drawn at random and in its place a ball of the other colour is put in the box. Now one ball is drawn at random from the box. Find the probability that it is red.

(OR)

- b) The following data show the number of seeds germinating out of 10 on damp filter for 80 set of seeds. Fit a binomial distribution to this data.

X	0	1	2	3	4	5	6	7	8	9	10
f	6	20	28	12	8	6	0	0	0	0	0

14. a) 10 persons were appointed in a electrical position in an office. Their performance was noted by giving a test and the means recorded out of 50. They were given 6 months training and again they were given a test and marks were recorded out of 50. By applying t test can it be concluded that the employees have benefited by the training.

Employees	A	B	C	D	E	F	G	H	I	J
Before training	25	20	35	15	42	28	26	44	35	48
After training	26	20	34	13	43	40	29	41	36	46

(OR)

- b) In a random sample of 1000 persons from a town A, 400 are found to be consumers of wheat. In a sample of 800 from town B, 400 are found to be consumers of wheat. Do these data reveal a significant difference between town A and town B, so far as the proportion of wheat consumers is concerned?
15. a) To assess the significance of possible variation in performance in a certain test between the grammar schools of a city, a common test was given to a number of students taken at random from the senior fifth class of each of the four schools concerned. The results are given below. Make an analysis of variance of data.

A	B	C	D
8	12	18	13
10	11	12	9
12	9	16	12
8	14	6	16
7	4	8	15

(OR)

- b) In a survey of 200 boys of which 75 were intelligent, 40 had skilled fathers while 85 of the unintelligent boys had unskilled fathers. Do these figures support the hypotheses that skilled fathers have intelligent boys? Use chi-square test, value of chi-square for 1 degree of freedom at 5% level is 3.84.

Z-Z-Z

END