PSG COLLEGE OF ARTS & SCIENCE
(Autonomous)
BVOC DEGREE EXAMINATION DECEMBER 2023
(First Semester)
Branch – NETWORKING AND MOBILE APPLICATIONS

STATISTICAL DATA ANALYTICS

Time: 3 hours Maximum: **50** Marks

SECTION – A (5 Marks)
Answer **ALL** Questions.
ALL Questions Carry **EQUAL** Marks **(5 X 1= 5 Marks)**

1. Histogram is useful to determine graphically the value of
   a) mean b) median c) mode d) range

2. Rank correlation found by
   a) Pearson b) Spearman c) Galton d) Fisher

3. In moving average method we cannot find trend values of some
   a) End Periods b) Middle Period c) Starting and End Periods
   d) Starting Periods

4. The standard deviation of the sampling distribution is called
   a) Standard error b) Sample error c) Type I error
   d) Type II error

5. The calculated value of χ^2 is:
   a) Always positive b) Always negative c) Either positive or negative
   d) Neither positive nor negative

SECTION – B (15 Marks)
Answer **ALL** Questions.
ALL Questions Carry **EQUAL** Marks **(5X 3 = 15 Marks)**

6. a) Sketch a pie diagram from the following data.

Mobile Company	Redmi	Vivo	Samsung	Sony	LG
Sales in percentage	22	33	13	15	17

(OR)

b) Calculate Mean and Median from the following data.

Weight in grams	120	124	122	128	130	126
No.of items	5	9	7	4	10	6

7. a) Explain the various types of correlation with suitable example.

(OR)

b) Apply Spearman's Rank Correlation from the following data.

Marks in C++	50	60	65	70	75	40	70	80
Marks in Java	80	71	60	75	90	82	70	50

8. a) State the properties of Binomial distribution.

(OR)

b) Calculate 5 yearly moving average from the following data.

Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Expenditure (Rs.Lakhs)	332	311	357	392	402	405	410	427	405	438

9. a) A machine has produced 20 defective batteries in a batch of 400. After overhandling it produced 10 defectives in a batch of 300. Has the machine improved?

(OR)

b) Explain the testing procedure of independent sample t test.

Cont...

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

(OR)

b) The number of defects per unit in a sample of 100 units of a manufactured product was found as follows:

Number of defects	0	1	2	3	4	5	6
Number of units	35	40	19	2	0	2	2

Fit a Poisson distribution to the data and test for the goodness of fit. ($\chi^2_{2,0.05} = 5.99$)

SECTION – C (30 Marks)

Answer **ALL** Questions.

ALL Questions Carry **EQUAL** Marks **(5X 6 = 30Marks)**

11. a) Discuss the various types of graphical representation of data.

(OR)

b) Determine coefficient of variation from the following data.

Profit in Rs. lakhs	20-30	30-40	40-50	50-60	60-70
No. of Companies	5	13	24	5	3

12. a) Apply Karl Pearson's coefficient of correlation from the following data.

Advertisement Expenditure	10	12	18	8	13	20	22	15	5	17
Sales	88	90	94	86	87	92	96	94	88	85

(OR)

b) Distinguish between correlation and regression.

13. a) Identify seasonal indices by the method of simple average for the following data.

Year	I Quarter	II Quarter	III Quarter	IV Quarter
2018	78	66	84	80
2019	76	74	82	78
2020	72	68	80	70
2021	74	70	84	74
2022	76	74	86	82

(OR)

b) Discuss the various components of time series.

14. a) The following information related to purchase of bulbs from two manufactures A & B:

Manufacturer	Mean	S.D	N
A	2950 hours	100 hours	100
B	2970 hours	90 hours	100

Is there a significant difference in the mean life of two makes of bulbs?

(OR)

b) To test the variability of a certain modification in typist desks, 9 typists were given two tests of as nearly as possible the same nature, one on the desk in use and the other on the new type. The following difference in the number of words typed per minute were recorded:

Typist	A	B	C	D	E	F	G	H	I
Increase in number of words	2	4	0	3	-1	4	-3	2	5

Do the data indicate that modification in desk promotes speed in typing?
(Given for $t_{8,0.05} = 2.306$)

15. a) From the following data find out whether there is any association between shift and quality of parts produced? (Given $\chi^2_{(2,0.05)} = 5.991$)

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

(OR)

b. Explain the testing procedure of one way ANOVA.

Z-Z-Z END