PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BVoc DEGREE EXAMINATION MAY 2024
(First Semester)

Branch – **NETWORKING & MOBILE APPLICATION**

STATISTICAL DATA ANALYTICS

Time: Three Hours   Maximum: 50 Marks

SECTION-A (5 Marks)
Answer ALL questions
ALL questions carry EQUAL marks   (5 x 1 = 5)

1   In a two dimensional diagram
     (i)   Only height is considered
     (ii) Only width is considered
     (iii) Height, width and thickness are considered
     (iv) Both Height and Width are considered

2   The coefficient of correlation
     (i) has no limits   (ii) Can be less than 1
     (iii) can be more than 1   (iv) Varies between – 1 to + 1

3   If an event cannot take place, the probability will be
     (i) + 1   (ii) – 1   (iii) 0   (iv) – 1 to + 1

4   Null and alternative hypotheses are statements about:
     (i) Population parameters
     (ii) Sample parameters
     (iii) Sample statistics
     (iv) It depends - sometimes population parameters and sometimes sample
          statistics.

5   Analysis of variance is a statistical method of comparing the _____ of several
     populations.
     (i)   Standard deviations   (ii)   Variances
     (iii) Means   (iv) Proportions

SECTION - B (15 Marks)
Answer ALL Questions
ALL Questions Carry EQUAL Marks   (5 x 3 = 15)

6   a   Explain the Qualitative and Quantitative data.
                                    OR
     b   The following figures relate to the cost of construction of a house in Delhi:

Items	Cement	Steel	Bricks	Timber	Labour	Miscellaneous
Expenditure	20%	18%	10%	15%	25%	12%

          Represent the data by a pie diagram.

7   a   Explain the types of scatter diagram with suitable example.
                                    OR
     b   From the following data, obtain the coefficient of correlation for the ages of
          husbands and wives.

Age of husband	23	27	28	29	30	31	33	35	36	39
Age of Wife	18	22	23	24	25	26	28	29	30	32

8 a Discuss the various components of time series.

OR

b State the addition and multiplication theorem on probability.

9 a Explain the general procedure of testing of hypothesis.

OR

b A random sample of 10 boys had the following IQ's 70, 120, 110, 101, 88, 83, 95, 98, 107, 100. Do these data support the assumption of population mean IQ of 100 ($t_{0.05}$, 9df = 2.626).

10 a Two independent samples of 8 and 7 items respectively at the following values of variables are drawn

Sample – I	9	11	13	11	15	9	12	14
Sample – II	10	12	10	14	9	8	10	

Do the estimates of population variance differ significantly? ($F_{0.05}$, 7,6 df =4.01)

OR

b The number of parts for a particular spare part in a factory was found to vary from day to day. In a sample of study the following information was obtained.

Day	Mon.	Tues.	Wed.	Thrus.	Fri.	Sat.	Total
No. of Parts demanded	1124	1125	1110	1120	1126	1115	6720

Test the hypothesis that the number of parts demanded does depend on the day of the week ($\chi^2_{0.05}$, 5 df = 11.07).

SECTION -C (30 Marks)
Answer ALL questions
ALL questions carry EQUAL Marks   (5 x 6 = 30)

11 a Determine Mean, Median and Mode for the following distribution.

Daily Profit(Rs.)	150-200	200-250	250-300	300-350	350-400	400-450	450-500	500-550	550-600
No. of shops	10	30	40	70	60	15	10	10	5

OR

b The following are the frequency distribution of salaries of 200 employees of a company. Determine the Standard deviation and its coefficient of variation.

Salary (Rs.)	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
No. of employees	8	16	32	39	41	42	14	8

12 a From the following data, Compute Spearman's Rank coefficient of correlation.

Marks in I subject	40	46	54	60	70	80	82	85	85	90	95
Marks in II subject	45	45	50	43	40	75	55	72	65	42	70

OR

b From the following data, Obtain two regression equations.

Marks in Economics	25	28	35	32	31	36	29	38	34	32
Marks in Statistics	43	46	49	41	36	32	31	30	33	39

13 a Construct the 5 yearly moving averages for the following data.

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
No. of Students	705	685	703	687	705	689	715	685	725	730

OR

13 b Explain the Normal distribution and also state its properties.

14 a Explain the testing procedure of equality of two proportion.

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 the paired t test, can it be concluded that the employees have benefited by the training? ($t_{0.05}$, 9df = 2.626).

15 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? ($\chi^2_{0.05}$, 2 df = 5.991).

OR

b 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

Do you think that there is a significance difference in the performance of the four machines? Use ANOVA. ($F_{0.05}$, 3,12 df =3.49)

Z-Z-Z   END