PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
BVoc DEGREE EXAMINATION DECEMBER 2023
(Third Semester)

Branch – FOOD PROCESSING TECHNOLOGY

MATHEMATICS & STATISTICS

Time: Thr e Hours   Maximum: 50 Marks

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

1. Equivale it matrices
   a) A~B   b) A=B   c) A≠B   d) None of these

2. Which di igram is used to compare two or more than two groups ?
   a) Simple bar diagram   b) Multiple bar diagram
   c) Pie dia gram   d) Graphs

3. The value if co-efficient of correlation is always lies between
   a) 0 and 1   b) -1 and 1   c) -1 and 0   d) -1 and 0.5

4. Reject Ho when it is true means
   a) correct lecision   b) Type I error   c) Type II error   d) None of these

5. ANOVA i: used to compare
   a) Two me ins   b) Two proportions
   c) Two var ances   d) Several means

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

6. a). Define the following terms with an example:-
      (i) Diagona l matrix   (ii) Triangular matrix (iii) Skew-symmetric matrix

(or)

   b). If $A = \begin{bmatrix} 3 & 5 \\ 2 & 0 \end{bmatrix}$ and $B = \begin{bmatrix} 4 & -2 \\ 2 & 9 \end{bmatrix}$, then find $3A+B$.

7. a). Find media 1 for the following data :
      X : 57   58   61   42   38   65   72   66

(or)

   b). Given N=100, $\sum X = 1357$, $\sum X^2 = 24680$, find standard deviation.

8. a). Explain scatter diagram method of finding correlation.

(or)

   b). Given $\bar{X}= 36$, $\bar{Y} = 85$, $\sigma_x = 11$, $\sigma_y = 8$, $r = 0.66$ find regression equation of X on Y.

9. a). Write down the procedure for testing of hypothesis.

(or)

   b). Describe type I error and type II error.

10. a). From the following information , test whether the two attributes are
       independent at 5% level.

Area	Votes for Candidates	
	A	B
Rural	620	380
Urban	550	450

(or)

   b). Write down the assumptions of ANOVA.

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

11. a) Differentiate Matrices and determinants.

(or)

b). Find the inverse of a matrix :
   $3x + y + 2z =$
   $2x + 5y + 3z = 5$
   $x + 2y + z = 7$

12. a). Draw a Pie diagram to represent the following data :

Item	A	B	C	D	E	F	G	H
Percentage	26	13	6	10	15	6	10	14

(or)

b). The following data we re obtained while observing the life span of a few neon lights of a company. Calculate mean deviation and standard deviation.

Life span (Years)	4-6	6-8	8-10	10-12	12-14
No.of Neon lights	10	17	32	21	20

13. a) The following is the information relating to waist circumference (x) and abdominal AT(Y) recorded in respect of 10 individuals are as follows. Obtain rank correction coefficient between X and Y.

Waist Circumference (in cm) X :	74	72	81	83	74	71	80	83	63	73
Abdominal area (n cm2) Y:	25	25	42	42	29	21	29	32	11	32

(or)

b). Differentiate correlation and Regression.

14). a) Random samples drawn from two countries gave the following data relating to the heights of adult males :-

	Country A	Country B
Mean Height(inches)	67.42	67.25
Standard Deviation (inches)	2.58	2.50
No. of Samples	1000	1200

Is the difference between the means significant?

(or)

b). Explain the procedure for testing of hypothesis of single proportion in large samples.

15. a) In a certain experiment to compare two types of animal foods A and B the following results were obtained.

Animals	1	2	3	4	5	6	7	8
Food A	49	53	51	52	47	50	52	53
Food B	52	55	52	53	50	54	54	53

Examine whether the means of food A and Food B differ significantly after the results of increase in weights were observed in animals.

(or)

b) Out of 8000 graduates in a town 800 are females, out of 1600 graduate employees 120 are females, use χ^2 test to determine if any distinction is made in appointment on the basis of Sex. [Value of $\chi^2(1)$, 0.05 = 3.84].

Z-Z-Z   END