PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

Bvoc DEGREE EXAMINATION DECEMBER 2019
(Third Semester)

Branch - FOOD PROCESSING TECHNOLOGY

MATHEMATICS & STATISTICS

Time: Three Hours   Maximum: 75 Marks .

SECTION-A (10 Marks)
Answer ALL questions
ALL questions carry EQUAL marks   (10 x 1 = 10)

1   A diagonal matrix whose all the diagonal elements are equal is
(i) equal matrix   (ii) complex matrix
(iii) scalar matrix   (iv) unit matrix

2   A square matrix A of order n is said to be orthogonal, if
(i) $A'A=I_n$ (ii) $A'=0$ (iii) $A'=I_n$ (iv) $A=I_n$

3   A statistical data are collected for
(i) collecting data without any purpose (ii) a given purpose
(iii) any purpose   (iv) none of the above

4   Data collected by questionnaire are
(i) primg&y data   (ii) secondary data
(iii) published data   (iv) grouped data

5   Which of the following represents data?
(i) single value   (ii) only two value in a set
(iii) a group of value in a set (iv)   none of the above

6   Pie charts represents the components of a factor by
(i) percentages (ii) angles (iii) sectors (iv) circles

7   If for an individual series, assumed mean A=25, Idx=-21, for dx=x-A and
N=7, then the mean is
(i) 20   (ii) 21   (iii) 22   . (iv) 6.57

8   The lines of regression intersect at the point
(i)   (X, Y) (ii)(X,Y) (iii) (0,0) (iv) (1,1)

9   The hypothesis under test is
(i) simple hypothesis   (ii)   alternate hypothesis
(iii) composite hypothesis   (iv) null hypothesis

10   Range of t-statistics is
(i)   -1 to 1 (ii)-oo to oo   (iii) Oto 1 (iv) 0 to co

SECTION - B (35 Marks)
Answer ALL Questions
ALL Questions Carry EQUAL Marks (5 x 7 = 3 5)

11 a   If $A = \begin{pmatrix} 2 & 3 \\ 0 & 2 \end{pmatrix}$ $\begin{pmatrix} 1 \\ -1 \end{pmatrix}$ & B = $\begin{pmatrix} f & -2 \\ 0 \end{pmatrix}$ find AB and BA.

OR

b   Show that f A is an orthogonal matrix then A^1 and A'^1 are also orthogonal matrix.

12 a Mention the uses and limitations of statistics.

OR

b Briefly explain the sources of collecting secondary data.

13 a Marks scored by 30 students are given below:

41, 55, 48,47, 53, 48, 33, 32, 42, 55, 44, 38, 60,*65,* 71, 80, 41, 53, 47, 48,
55,20, 31, 34, 42, 51, 35, 35,26, 25.

Convert the marks into a continuous series of class interval of 10.

OR

b The following data are the areas in millions of sq.km of the ocean of the world.

Ocean	Pacific	Atlantic	Indian	Antartic	Arctic
Area	70.8	41.2	28.5	1A	4.8

3raw the pie diagram.

14 a Calculate mean from the following data:

Value:	1	2	3	4	5	6	7	8	9	10
Frequency:	21	30	28	40	26	34	40	9	15	57

OR

b Calculate Pearson's co-efficient of correlation from the following data.
Take 65 and 70 as the assumed mean of X and Y respectively.

X:	45	55	56	58	60	65	68	70	75	80	85
		50	48	60	62	64	65	70	74 '	82	90

15 a   A coin/is tossed 400 times and it turns up head 216 times. Discuss whether the coin may be an unbiased one, and explain briefly the theoretical principles you would use for this purpose?

OR

An examination was given to two classes consisting of 40 and 50 students respectively. In the first, class the mean mark was 74 with a std. deviation of 8, while in the second class the mean mark was 78 with std. deviation of 7. Is there an significant difference between the performance of the two classes at a 5% level of significance? ($Z_{0.05}$=l -96)

SECTION - C (30 Marks)
Answer any **THREE** Questions
ALL Questions Carry **EQUAL** Marks (3 x 10 - 30)

16   Explain briefly about the properties of Matrix multiplication.

17   Describe briefly about the sources with suitable illustration of collecting primary data.

18   Explain diagrammatic and graphical representation of data.

19   The following data gives the number of finished articles turned out per day by different number if workers in a factory. Find the mean and standard deviation.

No. of articles:	18	19	20	21	22	23	24	25	26	27
No. of workers:	3	7	11	14	18	17	13	8	5	4

20   Out of 120 person in a village, 76 were administered a new drug for preventing influenza and out of them 24 person were attacked by influenza. Out of those who were not administered the new drug, 12 persons were note affected by influenza. Use χ^2 test for finding out whether the new drug is effective or not? (at 5% level of significance).