PSG COLLEGE OF ARTS AND SCIENCE
(AUTONOMOUS)

MCom(IB) DEGREE EXAMINATION DECEMBER 2023
(Second Semester)

Branch – **INTERNATIONAL BUSINESS**

BUSINESS STATISTICS & OPTIMIZATION TECHNIQUES

Time : Three Hours Maximum : 50 Marks

SECTION –A (5 Marks)
Answer **ALL** questions
All questions carry **EQUAL** marks (5x1=5)

1. For any discrete distribution , standard deviation is ---------- mean deviation from mean.
   (i) less than (ii) greater than
   (iii) equal to (iv) none

2. Which of the following diagram is used to study the linear relationship between two variables?
   (i) bar diagram (ii) pictogram (iii) scatter diagram (iv) Lorenz curve

3. The equality of two population variances tested by
   (i) t -test (ii) F -test (iii) Z –test (iv) χ^2 – test

4. The transportation problem deals with stage of feasible solution must be
   (i) a single product from several sources to a destination
   (ii) a multi- product from several sources to several destinations
   (iii) a single product from several sources to several destinations
   (iv) a single product from a source to several destinations

5. Which of the following is not used for decision making under uncertainity?
   (i) minimax of action (ii) maximax criterion
   (iii) minimize expected loss criterion (iv) maximin criterion

SECTION – B (15 Marks)
Answer **ALL** questions
All questions carry **EQUAL** marks (5x3=15)

6. a What is measures of dispersion? List out them.

(or)

   b The average salary of male employees in a firm is was Rs.5200 and that of females was Rs.4200. The mean salary of all the employees was Rs.5000. Find the percentage of male and female employees.

7. a For the data given below , calculate the rank correlation coefficient.

X :	21	36	42	37	25
Y :	47	40	37	42	43

(or)

   b What is regression? Write down the two regression equations.

8. a Define t- test. Give its applications.

(or)

   b What is ANOVA? State its assumptions.

Cont...

9. a Obtain an initial basic feasible solution to the following transportation problem by least cost method.

		Destination				
		D	E	F	G	**Supply**
	A	11	13	17	14	**250**
Source	B	16	18	14	10	**300**
	C	21	24	13	10	**400**
Demand		**200**	**225**	**275**	**250**	

(or)

b What is an assignment problem? Give two applications.

10. a Write a brief note on decision-making environment.

(or)

b Write a note on EMV.

SECTION – C (30 Marks)

Answer **ALL** questions
All questions carry **EQUAL** marks (5x6=30)

11. a Find the mean deviation about mean and its coefficient from the following data.

Age(in years) :	21	25	27	32	41	46	50	55
No. Workers :	2	3	10	20	15	10	8	2

(or)

b From a moderately skewed distribution of retail prices for men's shoes, it is found that the mean price is R.20 and the median price is Rs.17. If the coefficient of variation is 20% , find the Pearson's coefficient of skewness.

12. a Calculate the correlation coefficient between aptitude test(x) and productivity index(y).

x :	57	58	59	59	60	61	62	64
y :	67	68	65	68	72	72	69	71

(or)

b State all the properties of regression coefficients.

13. a A random sample of 10 boys had the following I.Q 's :
70, 120, 110, 101, 88, 83, 95, 98, 107, 100
Do these data support the assumption of a population mean I.Q of 100?

(or)

b Out of 8000 graduates in a town 800 are females, out of 1600 graduates employees 120 are females. Use χ^2 – test to determine if any distinction made is made in appointment on the basis of sex.

14. a Enumerate the steps involved in optimality test for a transportation problem.

(or)

b Solve the following minimal assignment problem.

		Worker			
		A	**B**	**C**	**D**
	1	41	72	39	52
Job	2	22	29	49	65
	3	27	39	60	51
	4	45	50	48	52

15. a What is EOL? State the major steps in the EOL criterion.

(or)

b Explain the method of finding optimal solution of two-person zero-sum games.

Z-Z-Z END