

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MCom (IB) DEGREE EXAMINATION DECEMBER 2022
(Second Semester)

Branch – INTERNATIONAL BUSINESS

**BUSINESS STATISTICS AND MATHEMATICAL OPTIMIZATION
TECHNIQUES**

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks (5 x 1 = 5)

- 1 Find the mode of the call received on 7 consecutive day 11,13,13,17,19,23,25
(i) 11 (ii) 13
(iii) 17 (iv) 23
- 2 A statement made about a population for testing purpose is called?
(i) Statistic (ii) Hypothesis
(iii) Level of Significance (iv) Test-Statistic
- 3 What is the mean of a Chi Square distribution with 6 degrees of freedom?
(i) 4 (ii) 12
(iii) 6 (iv) 8
- 4 Operations Research (OR) , which is a very powerful tool for -----
(i) Research (ii) Decision – Making
(iii) Operations (iv) None of the above
- 5 One of the assumptions in the game theory is
(i) All players act rationally and intelligently
(ii) The winner alone acts rationally
(iii) Loser acts intelligently
(iv) Both the players believe luck

SECTION - B (15 Marks)

Answer ALL Questions

ALL questions carry EQUAL marks (5 x 3 = 15)

- 6 a Discuss the scope of statistics.
OR
b Calculate the range from the following values.

Marks	10 – 20	20 – 30	30 – 40	40 – 50
No. Of Students	5	5	5	5

Also calculate the coefficient of range.

- 7 a Differentiate Correlation from Regression.
OR
b Calculate the coefficient of correlation between X and Y for the following:

X	1	3	4	5	7	8	10
Y	2	6	8	10	14	16	20

- 8 a Describe about Multivariate data analysis.
OR
b Draft the need of Chi – Square Analysis.

Cont...

- 9 a Solve the following assignment problem shown in Table using Hungarian method. The matrix entries are processing time of each man in hours.

	I	II	III	IV	V
1	20	15	18	20	25
2	18	20	12	14	15
3	21	23	25	27	25
4	17	18	21	23	20
5	18	18	16	19	20

OR

- b Write the scope of OR.
- 10 a Bring out the need of EMV Criterion.
- OR
- b State the importance of Game Theory.

SECTION -C (30 Marks)

Answer ALL questions

ALL questions carry EQUAL marks (5 x 6 = 30)

- 11 a Calculate the mean deviation about the mean for the following data :

No. of Calls	2	3	4	5	6	7
Frequency	1	5	8	4	2	1

OR

- b Calculate Karl Pearson's Coefficient of Skewness from the data given below :

Size (x)	1	2	3	4	5	6	7
Frequency (f)	10	18	30	25	12	3	2

- 12 a A sample of 12 fathers and their eldest sons gave the following data about their height in inches

Father	65	63	67	64	68	62	70	66	68	67	69	71
Son	68	66	68	65	69	66	68	65	71	67	68	70

Compute the rank correlation coefficient

OR

- b Calculate the regression equations from the following:

X	6	2	10	4	8
Y	9	11	5	8	7

- 13 a Is gender independent of education level? A random sample of 395 people were surveyed and each person was asked to report the highest education level they obtained. The data that resulted from the survey is summarized in the following table.

	High School	Bachelors	Master46s	PhD.	Total
Female	60	54	46	41	201
Male	40	44	53	57	194
Total	100	98	99	98	395

Are gender and education level dependent at 5% level of significance? In other words, given the data collected above, is there a relationship between the gender of an individual and the level of education that they have obtained?

OR

- b Two random samples drawn from a normal population are

Sample 1	20	16	26	27	23	22	18	24	22		
Sample 2	27	33	42	35	32	34	38	28	41	43	45

Test whether the two population have the same variance

- 14 a Elaborate the Steps of Vogel's Approximation Method.

OR

- b Determine an initial basic feasible solution of the following transportation problem by north west corner method.

- 15 a Solve the following game by using the principle of dominance

	I	II	III	IV
I	3	2	4	0
I	3	4	2	4
I	4	2	4	0
I	0	4	0	8

OR

- b Elaborate the functions of Game Theory.

Z-Z-Z

END