STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI – 600 086.
(For candidates admitted during the academic year 2019– 20 and thereafter)

SUBJECT CODE: 19CO/AC/QT15

B.Com (CS) DEGREE EXAMINATION NOVEMBER 2022
CORPORATE SECRETARYSHIP
FIRST SEMESTER

COURSE : ALLIED – CORE
PAPER : QUANTITATIVE TECHNIQUES FOR BUSINESS
TIME : 3 HOURS MAX. MARKS: 100

SECTION – A

ANSWER ALL QUESTIONS: (10 x 2 = 20)

1. Define Correlation with an example.
2. Two lines of regression are $5X - 6Y + 90 = 0, 15X - 8Y - 130$. Find the means of the two series.
3. State the Components of Time series.
4. Fit a trend line by the method of freehand method.

Year	1991	1992	1993	1994	1995	1996	1997	1998	1999
Production	20	22	24	21	23	25	23	26	25

5. State any two properties of t-distribution
6. How many pairs of observations must be included in a sample in order that an observed correlation coefficient of value 0.42. Shall have a calculated value of t greater than 2.72?
7. The Sum of the observed and expected frequencies is always_____.
8. State any two uses of Chi-Square.
9. The observed frequency of a particular variable is 1026 and expected frequency is 1000. Calculate $(O_i - E_i)^2$
10. From the following data, calculate coefficient of correlation between X and Y:

Particulars	X series	Y series
No. of items	15	15
Arithmetic mean	25	18
Sum of squares of deviation from mean	136	138

Summation of product of deviations of X and Y series from respective arithmetic mean = 122

SECTION – B

ANSWER ANY FIVE QUESTIONS: (5 x 8 = 40)

11. From the data given below, find:
    (a). The two regression equations
    (b). The coefficient of correlation between the marks in Mathematics and Statistics
    (c) The most likely marks in statistics when the marks in Mathematics is 30.

Marks in Mathematics (X)	25	28	35	32	31	36	29	38	34	32
Marks in Mathematics (Y)	43	46	49	41	36	32	31	30	33	39

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12. Calculate seasonal indices by the ratio to moving average method

Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1997	68	62	61	63
1998	65	58	66	61
1999	68	63	63	67

13. Intelligence test on two groups of boys and girls gave the following results:

	Mean	S.D	N
Girls	75	15	150
Boys	70	20	250

Is there a significant difference in the mean scores obtained by boys and girls?

14. In an anti a malarial campaign in a certain area, quinine was administered to 812 persons out of a total population of 3,248. The number of fever cases is shown below:

Treatment	Fever	No Fever	Total
Quinine	20	792	812
No Quinine	220	2216	2436
Total	240	3008	3248

Discuss the usefulness of quinine in checking malaria.

15. 200 digits are chosen at the random from a set of tables. The frequencies of the digits are as follows:

Digit	0	1	2	3	4	5	6	7	8	9
Frequency	18	19	23	21	16	25	22	20	21	15

Use Chi- Square test to assess the correctness of the hypothesis that the digits were distributed in equal numbers in the tables from which they were chosen.

16. Two random samples were drawn from two normal populations and their values are:

A	66	67	75	76	82	84	88	90	92		
B	64	66	74	78	82	85	87	92	93	95	97

Test whether the populations have the same variance at the 5% level of significance. (F=3.36) at 5% level for $v_1 = 10$, $v_2 = 8$.

17. The sale of a commodity in tonnes varied from January 1999 to December 1999 in the following:

280	300	280	280	270	240
230	230	220	200	210	200

Fit a trend line by the method of semi averages.

SECTION – C

ANSWER ANY TWO QUESTIONS: (2 x 20 = 40)

18. Calculate the coefficient of correlation

Case	A	B	C	D	E	F	G	H
X_1	10	6	9	10	12	13	11	9
X_2	9	4	6	3	11	13	8	4

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19. The Production (in thousand quintals) of a sugar factory:

Year	1992	1993	1994	1995	1996	1997	1998
Production	80	90	92	83	94	99	92

(i) Fit a straight line trend
(ii) Plot on a graph and show the trend line.
(iii) Estimate the production in 2001.

20. For a random sample of 10 persons, fed on diet A, the increased weight in pounds in a certain period were:

10	6	16	17	13	12	8	14	15	9

For another random sample of 12 persons, fed on diet B, the increase in the same period were:

7	13	22	15	12	14	18	8	21	23	10	17

Test whether the diets A and B differ significantly as regards their effect on increase in weight.

21. The data represent the number of units of production per day tumed out of 5 different workers using 4 different types of machines:

		Machine type			
		A	B	C	D
Workers	1	44	38	47	36
	2	46	40	52	43
	3	34	36	44	32
	4	43	38	46	33
	5	38	42	49	39

(a) Test whether the mean productivity is the same for the different machine types.
(b) Test whether the 5 men differ with respect to mean productivity.

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