STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI – 600 086.
(For candidates admitted during the academic year 2019-20 and thereafter)
SUBJECT CODE: 19AF/AC/SB15
B.Com (A&F) DEGREE EXAMINATION DECEMBER 2020
FIRST SEMESTER
COURSE : ALLIED CORE
PAPER : STATISTICS FOR BUSINESS DECISIONS
TIME : 90 MINUTES **MAX. MARKS: 50**

SECTION A **(3x2=6)**
Answer all the questions

1. What are the types of correlation?
2. Write a short note on standard deviation and coefficient of variation.
3. A sample of 100 measurements of breaking strength of cotton threads gave a mean of 7.4 ounces and a standard deviation of 1.2 ounces. Find 95% confidence limits for the mean breaking strength (z value for 2.5% significance level is 1.96)

SECTION B **(3x8 =24)**
Answer any Three Questions

4. a. Complete the following two-way ANOVA table. Determine the critical table F values and reach conclusions about the hypotheses. Let alpha =.05.

Source of Variance	SS	Df	MS	F
Row	126.98	3		
Column	37.49	4		
Error	733.65	60		
Total				

b. Use the following data to determine the equation of the multiple regression model of Y as dependent variable. Comment on the regression coefficients.

Predictor	Coefficient
Constant	31,409.5
X_1	.08425
X_2	289.62
X_3	-0.0947

5. Consumers are asked to rate a company both before and after viewing a video on the company twice a day for a week. The data are given in the below table. Use an alpha of .05 to test to determine whether there is a significant difference in the ratings of the company after the one week video treatment.

Individual	1	2	3	4	5	6	7
Before	32	11	21	17	30	38	14
After	39	15	35	13	41	39	22

6. Milk dairies would like to know whether the sales of milk are distributed uniformly over a year, so they can plan for milk production and storage. In this situation the producers are attempting to determine whether the amounts of milk sold are the same for each month of the year. They ascertain the number of gallons of milk sold by sampling one large supermarket each month during a year, obtaining the data mentioned in the table below. Use alpha = .01 to test whether the data fit a uniform distribution.

Month	Gallons	Month	Gallons
Jan	1610	Jul	1410
Feb	1585	Aug	1350
Mar	1649	Sept	1495
Apr	1590	Oct	1564
May	1540	Nov	1602
Jun	1397	Dec	1655

7. Assuming that trend is absent, compute the seasonal index for the following data using simple average method:

Year	Ist quarter	II Quarter	III Quarter	IVth Quarter
1970	75	60	54	59
1971	86	65	63	80
1972	90	72	66	85
1973	100	78	72	93

SECTION C **(1x20=20)**

Answer any One Question

8. Find the coefficient of correlation between the grouped frequency distribution of two variables (Profits and sales) given below in the form of a two- way frequency given below and interpret the correlation coefficient.

Profit (in '000 rupees)		Sales (in '0000 rupees) ⟶					
		80-90	90-100	100-110	110-120	120-130	Total
	50-55	1	3	7	5	2	18
	55-60	2	4	10	7	4	27
	60-65	1	5	12	10	7	35
	65-70	-	3	8	6	3	20
	Total	4	15	37	28	16	100

9. A specialist in hospital administration stated the number of FTEs (full-time employees) in a hospital can be estimated by counting the number of beds in the hospital (a common measure of hospital size). A healthcare business researcher decided to develop a regression model in an attempt to predict the number of FTEs of a hospital by the number of beds. He surveyed 12 hospitals and obtained the following data. The data are presented in sequence, according to the number of beds.

Number of Beds	FTEs	Number of beds	FTEs
23	69	50	138
29	95	54	178
29	102	64	156
35	118	66	184
42	126	76	176
46	125	78	225

a) Fit in the regression equation of FTEs on number of beds and interpret the regression coefficient.
b) Find out the calculated/estimated values of FTEs based on number of beds given in the problem.
c) Calculate the standard error of estimate.

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