STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI – 600 086.
(For candidates admitted during the academic year 2011-12 & thereafter)

SUBJECT CODE: 11CM/AC/SB44

B.Com./B.Com. (CS) DEGREE EXAMINATION APRIL 2016
FOURTH SEMESTER

COURSE   :   ALLIED – CORE
PAPER   :   BUSINESS STATISTICS
TIME   :   3 HOURS   **MAX. MARKS :100**

SECTION – A
ANSWER ALL THE QUESTIONS   **(10 × 3 = 30)**

1. What are the various components of the Time Series?

2. State the properties of correlation coefficient.

3. List out the types of Hypothesis.

4. What are the conditions to be satisfied for applying chi square test?

5. Write the assumptions in analysis of variance.

6. From the following calculate 3 years moving averages:

Year:	2003	2004	2005	2006	2007
Production	21	22	23	25	24

7. Show if the following data is inconsistent.

   $r_{12} = 0.06$, $r_{13} = \square\ 0.5$ and $r_{23} = \square\ 0.8$.

8. The Standard deviation of a sample of size 50 is 6.3. Could this have come from a normal population with S.D – 6?

9. If the value of $(0 - E)^2 = 258$ and $E = 20$. Find the value of Chi-Square test.
   (Table value of Chi square @ 5df = 11.07.)

10. Find out the variance ratio:

Source of Variation	Mean sum of square
Between the Column	84.25
Error	22.83

(Table value of F @ 5% for (2,9) df = 4.29)

2..

SECTION – B
ANSWER ANY FIVE QUESTIONS (5 × 8 = 40)

11. From the following data calculate the four year moving average and determine the trend values. Find the short term fluctuations.

Year : 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010
Value : 50.0 36.5 43.0 44.5 38.9 38.1 32.6 41.7 41.1 33.8

12. If $r_{12} = 0.8$, $r_{13} = \square \ 0.4 \ r_{23} = \square \ 0.56$, Find partial correlation co-efficient.

13. A sample of ten house owners is drawn and the following values of their incomes are obtained. Mean Rs 6000 Standard deviation Rs 650. Test hypothesis that average income of house owners of the town is Rs 5,500. Table value of t for 9 d.f at 5% level = 2.262.

14. Random samples drawn from two places gave the following data relating t**o** the heights of adult males.

	Place A	Place B
Mean height (inches)	68.50	68.58
SD of heights	2.5	3.0
Sample Size	1200	1500

Test at 5% level that the mean height is same for adults in the two places.
(Table value of z at 5% level for two tailed test is 1.96.)

15. A company keeps records of accidents. During a recent safety review, a random sample of 60 accidents was selected and classified by day of the week on which they occurred.

Day : MON TUE WED THU FRI
No. of Accidents : 8 12 9 14 17

Test whether there is any evidence that accidents are more likely on some days than others. (Table Value of χ^2 for 4 df at 5% level = 9.488)

16. From the following data test if the difference between the variances is significant at 5% level of significance.

Sum of squares of deviations from the mean   84.4   102.6
Size   8   10
Sample   A   B
(Table Value of F – 7,9 df at 5% level = 3.29)

17. Calculate the regression equations of X on Y and Y on X from the following data and estimate X when Y = 26:

X	10	12	13	17	18	20	24	30
Y	5	6	7	9	13	15	20	21

Calculate coefficient of correlation also.

SECTION –C

ANSWER ANY TWO QUESTIONS $(2 \times 15 = 30)$

18. Fit a straight line to the following data:

Year	2008	2009	2010	2011	2012	2013	2014	2015
Sales In Lakhs	38	40	65	72	69	60	87	95

   Estimate the sales for 2016.

19. In a bivariate distribution,
      $s.d_1 = 3$, $s.d_2 = 4$, $s.d_3 = 5$
      If $r_{12} = 0.7$ $r_{13} = 0.61$ and $r_{23} = 0.4$
   Find the Partial and Multiple correlations coefficient.

20. The following data is collected on two characteristics:

	Smokers	**Non Smokers**
Literate	83	57
Illiterate	45	68

   Based on this you can say that there is no relation between the habit of smoking and literacy.

21. Set up ANOVA Table for the following per hectare yield for three varieties of wheat, each grown in four plots.

	Variety of wheat's		
Plots of Lands	*A1*	*A2*	*A3*
1	6	5	5
2	7	5	4
3	3	3	3
4	8	7	4

   Also work out F- ratio and test whether there is significant difference among the average yields in the 3 varieties of wheat.

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