

STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI – 600 086.
(For candidates admitted during the academic year 2008-2009)

SUBJECT CODE : **CM/PC/SB14**

M.Com. DEGREE EXAMINATION NOVEMBER 2008
COMMERCE
FIRST SEMESTER

COURSE : **MAJOR – CORE**
PAPER : **STATISTICS FOR BUSINESS APPLICATIONS**
TIME : **3 HOURS** **MAX. MARKS : 100**

SECTION – A

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

1. From daily earnings data table, find the mean and medium of daily wages

Daily earnings (Rs.)	50-53	53-56	56-59	59-62	62-65	65-68	68-71	71-74	74-77
No. of persons	3	8	14	30	36	28	16	10	5

2. Find Kaul Prarson's coefficient of correlation between sales and expenses of the following ten firms.

FIRM	1	2	3	4	5	6	7	8	9	10
SALE in 1000 units	50	50	55	60	65	65	65	60	60	50
EXPENSE in 1000 Rs.	11	13	14	16	16	15	15	14	13	13

3. What are the components of a Time series and explain the significance of each one of them.
4. The first three moments of a distribution about the values 2 are 1,16 and –40 respectively. Find out mean, variance and third moment. Also obtain the first three moments about zero.
5. Compare dispersion, skewness and kurtosis of a distribution.
6. Assume that half of the population is vegetarian so that the chance of an individual being a vegetarian is $\frac{1}{2}$. Assuming that 100 investigators each take sample of 10 individuals to see whether they are vegetarians, how many investigators would you expect to report that less than three people were vegetarians.

7. Consider the following distribution.

	Distribution A	Distribution B
Mean	100	90
Median	90	80
Standard Deviation	10	10

- i) Distribution A has the same degree of variation as distribution B.
 ii) Both distribution has the same degree of skewness – comment.
8. If a black ball is drawn from one of the three bags, the first containing three black balls and seven white balls; the second five black balls are three white balls; and third eight black and four white balls. What is the probability the ball drawn is from the first bag?

SECTION – B

ANSWER ANY THREE QUESTIONS:

(3 x 20 = 60)

9. Calculate the first four moments about the mean and also the value of β_1 and β_2 for the following data

Mark	0-10	10-20	20-30	30-40	40-50	50-60	60-70
No. of students	8	12	20	30	15	10	5

10. Given the population figures of India as follows:
- | | | | | | | | |
|-------------|------|------|------|------|------|------|------|
| Census year | 1911 | 1921 | 1931 | 1941 | 1951 | 1961 | 1971 |
| populations | 25 | 25.1 | 27.9 | 31.9 | 36.1 | 43.9 | 54.7 |
- (in crores)
- Fit an exponential trend $y=ab^x$ to the above data by the method of least squares and find the trend values. Estimate the population in 1981.
11. a) Interpolate the number of students getting marks not exceeding 26 in statistics from the following data:
- | | | | | |
|-----------------------|----|----|----|----|
| Marks not exceeding : | 15 | 25 | 30 | 35 |
| No. of students : | 36 | 40 | 45 | 48 |
- b) Find out the number of students securing second division in the University Examination from the following figures:
- | | | | | | |
|-------------------|------|-------|-------|-------|--------|
| Marks obtained : | 0-20 | 20-40 | 40-60 | 60-80 | 80-100 |
| (out of 100) | | | | | |
| No. of students : | 5 | 26 | 85 | 54 | 30 |
- (48% & above, less than 68% marks – 2nd division)
12. a) what Excel formulas would you use to calculate averages, standard deviation, median, variance and chi-square?
- b) What are the characteristics of the normal probability distribution?
- c) When are two events said to be (i) mutually exclusive (ii) independent events.

13. a) From the data given below, find (a) the two regression equations, (b) correlation coefficient between marks in Economics and marks in statistics (c) the most likely marks in statistics, when the marks in Economics is 30.

Marks in Economics	25	28	35	32	31	36	29	38	34	32
Marks in Statistics	43	46	49	41	36	32	31	30	33	39

- b) Distinguish between correlation and regression.

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