

**STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI – 86**  
**(For candidates admitted from the academic year 2004 – 05 & thereafter)**

**SUBJECT CODE : EC/AO/AS43**

**B. A. DEGREE EXAMINATION, APRIL 2008**  
**BRANCH IV - ECONOMICS**  
**FOURTH SEMESTER**

**COURSE : ALLIED – OPTIONAL**  
**PAPER : applied statistics**  
**TIME : 3 HOURS. MAX. MARKS : 100**

**SECTION – A**  
**ANSWER ALL QUESTIONS (10X3= 30)**

1. Define Conditional Probability.
2. Define probability density function of a continuous random variable.
3. Write down the properties of Binomial distribution.
4. What is meant by expectation?
5. Give the meaning of Multiple Correlation.
6. Give briefly the usefulness of Multiple Regression.
7. Give any two applications of t distribution.
8. Define Chi square Variable.
9. What are non parametric tests.
10. What is meant by Randomised Block Design.

**SECTION – B**  
**ANSWER ANY FIVE QUESTIONS.**

**(5X6=30)**

11. A problem in statistics is given to 3 students A, B, C whose chances of solving are respectively  $\frac{3}{5}$ ,  $\frac{2}{5}$ ,  $\frac{3}{4}$ . What is the probability that two of them solve the problem?
12. Fit a Poisson Distribution for the following data.

X	0	1	2	3	4	Total
FREQ.	500	340	120	30	10	1000
13. Given  $\sigma_1 = 3$ ,  $\sigma_2 = 4$ ,  $\sigma_3 = 5$ ,  $r_{23} = 0.4$ ,  $r_{31} = 0.6$ ,  $r_{12} = 0.7$ . Obtain the regression equation of  $X_1$  on  $X_2$  &  $X_3$ .
14. Explain sign test.
15. A certain stimulus administered to 12 patients resulted in the following increases in Blood Pressure. Can it be concluded that the stimulus in general will be accompanied by increase in Blood Pressures.  
5, 2, 8, -1, 3, 0, 6, -2, 1, 5, 0, 4
16. Explain the principles of experimental designs.

17. A test in Mathematics was given to 400 high school children of whom 150 were boys and 250 were girls. The results were as follows.

BOYS

GIRLS

$$\bar{X}_1 = 72$$

$$\bar{X}_2 = 73.0 \text{ (Mean Scores)}$$

$$\sigma_1 = 7$$

$$\sigma_2 = 6.4 \text{ (Standard deviation)}$$

Test the difference between mean scores of boys and girls.

**SECTION – C**  
**ANSWER ANY TWO QUESTIONS.**

(2x20=40)

18. The following data shows the marks obtained by two groups of students.

I GROUP	18	20	36	50	49	36	34	49	41
II GROUP	29	28	26	35	30	44	46		

Examine the significance of difference between the arithmetic mean marks obtained by students of the 2 groups. Test at 5% level of significance.

19. a) An economist wants to test the hypothesis that the proportion of firms intending to increase the prices of their product is the same in three industries. Should the economist accept or reject the hypothesis.

Decision	No. of Firms			Total
	A	B	C	
To Raise Price	40	50	60	150
Not to Raise Price	60	50	40	150
Total	100	100	100	300

- b) Explain the usefulness of Non Parametric tests. (15+5)

20. A certain company had 4 salesmen each of whom was sent for a week into 3 types of area. The no. of units sold in given below.

Discuss the difference between a) Sales man b) Areas

Type of Area	Salesman			
	A	B	C	D
X	30	70	30	30
Y	80	50	40	70
Z	100	60	80	80

