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 2007
BRANCH IV - ECONOMICS
FOURTH SEMESTER

COURSE : ALLIED – OPTIONAL
PAPER : APPLIED STATISTICS
TIME : 3 HOURS. MAX. MARKS : 100

SECTION – A

ANSWER ALL QUESTIONS (10 X 3 = 30)

1. Define Probability
2. What is conditional Probability?
3. What do you understand by "Random Variable"?
4. Define Mathematical Expectation.
5. What is partial correlation?
6. What is multiple regression?
7. Mention the constants of Poisson Distribution.
8. Explain 'Non-parametric Tests'.
9. Define χ^2.
10. Explain Latin Square design.

SECTION – B
ANSWER ANY FIVE QUESTIONS.

(5X6=30)

11. Find the probability of drawing a Queen, a King and a Knave in that order from a pack of cards in three consecutive draws, the cards drawn not being replaced.

12. State and explain Addition theorem of probability.

13. A dealer in refrigerators estimates from his past experience, the probabilities of his selling refrigerators in a day. These are as follows
No. of refrigerators.

Sold in a day	0	1	2	3	4	5	6
Probability	0.03	0.20	0.23	0.25	0.12	0.10	0.07

Find the mean number of refrigerators sold in a day.

14. Discuss the properties of Normal Distribution.

15. A coin is tossed six times. What is the probability of obtaining four or more heads?

16. If $r_{12} = 0.86$, $r_{13} = 0.65$, and $r_{23} = 0.72$ find the partial correlation co-efficient $r_{12.3}$

17. A sample of 100 tyres is taken from a lot. The mean life of tyres is found to be 39,350 kms with a standard deviation of 3260. Could the sample come from a population with mean life of 40,000 kms.

. .2

SECTION – C
ANSWER ANY TWO QUESTIONS.

(2x20=40)

18. The manufacturer of a certain make of electric bulbs claims that his bulbs have a mean life of 25 months with a standard deviation of 5 months. A random sample of 6 such bulbs gave the following values
Life in months 24, 26, 30, 20, 20, 18
Can you regard the producer's claim to be valid at 1% level of significance (Given that the table value of t at 1% level for 5 degrees of freedom = 4.032)

19. In a survey of 200 boys, of which 75 were intelligent, 40 had skilled fathers; while 85 of the unintelligent boys had unskilled fathers. The data are given in the form of following table.

	Skilled	Unskilled	Total
Intelligent	40	35	75
Unintelligent	40	85	125
Total	80	120	200

Do these data support the hypothesis that skilled fathers have intelligent boys? (The value of χ^2 for 1 degree of freedom at 5% level is 3.84)

20. The three samples below have been obtained from normal populations with equal variances. Test the hypothesis that the sample means are equal

x_1	x_2	x_3
8	7	12
10	5	9
7	10	13
14	9	12
11	9	14

The table value of F at 5% level of significance for $\gamma_1 = 2$ and $\gamma_2 = 12$ is 3.88.

21. Twenty four applicants for a position are interviewed by three administrators and rated on a scale of five as to suitability for the position. Each applicant is given a 'suitability' score which is the sum of the three numbers. Although college education is not a requirement for the position a personnel director felt that it might have some bearing on suitability for the position. Rates made their ratings on the basis of individuals interviews and where not told the educational background of a applicants. Twelve of the applicants had completed atleast two years of college. Use the Mann-Whitney U test to determine whether there was a difference in the scores of the two groups. Use 0.05 level of significance.

Group A	7	11	9	4	8	6	12	11	9	10	11	11
Group B	8	9	13	14	11	10	12	14	13	9	10	8

****