ECONOMICS
ECO: 1.4
STATISTICAL ECONOMICS

Full Marks: 80
Time: 3 Hours

The figures in the margin indicate full marks for the questions

1. Answer the following questions. 2x4=8
   a. What do you mean by mutually exclusive events?
   b. What is a sample statistic?
   c. Show that the probability of an impossible event is 0.
   d. What is power of a test?

2. Answer the following questions. 5x4=20
   a. Examine the following statement and add comments. The mean of binomial distribution is 5 and standard deviation is 3.
   b. What is hypothesis testing?
   c. Briefly explain the properties of Poisson distribution.
   d. What are the two types of errors?

3. Answer any two (2) of the following questions. 10x2=20
   a. Probability of any ship of company been destroyed on a certain voyage is 0.02. The company owns 6 ships for the voyage. What is the probability of loosing (i) atmost 2 ships and (ii) none of the ships? (5+5)
   b. Explain sampling and non sampling errors. Suggest measures to avoid them? (7+3)
   c. Explain the least square method of estimating parameters
   d. What is estimation? What are point estimates and interval estimates? What are the characteristics of a good estimator? (2+3+5)

P.T.O.

4. Answer the following questions. 16x2=32

A. The local authorities in a certain city installed 2000 electric line in a street of the city. If a lamp has average life of 1000 burning hours with standard deviation 200 hours. Find

1) What number of lamps might be expected to fail in the first 700 burning hours?

2) After what period of burning hours would we expect that

a) 12 per cent of the lamps would fail.

b) 15 percent of the lamps would be still burning. 6+5+5=16

OR

B. Explain the paired t-test. The sales data of an item in six shops before and after a special promotion campaign are as under

Shops	a	b	c	d	e	f
Before	53	28	31	48	50	42
After	58	29	30	55	56	45

Can the campaign be claimed as success? Test at 5% level of significance. ($t_{0.05}$=2.57; v=5)

C. Explain the properties of normal distribution? In a normal distribution exactly 7 percent of the items are under 35 and 89 percent are under 63. What are the mean and standard deviation of the distribution? 6+10=16

OR

D. What is chi-square test? What are its uses? A milk producers union wishes to test whether the preference pattern of consumers for its products is dependent on income levels. A random sample 500 individuals gives the following data below. Can you conclude the preference patterns are independent of income levels? ($\mathbf{X}^2$=5.99 for v=2 at 5% level of significance) (6+10)

Income	Product A	Product B	Product C
Low	160	300	140
Medium	140	100	160
High	300	400	300

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