Exam.Code:0008
Sub. Code: 0668

2071

B.A./B.Sc. (Hons.) Fourth Semester

Economics

Paper – III: Economics: Theory of Statistics

Time allowed: 3 Hours

Max. Marks: 90

NOTE: *Attempt five questions in all, including Question No. I which is compulsory and selecting one question from each Unit.*

x-x-x

I. Attempt any nine of the following :-

a) Differentiate between Discrete and Continuous variables.

b) Differentiate between correlation and regression analysis

c) Define Cromplrtz growth curve.

d) Give p.m.f. of normal distribution.

e) Define Chebychev's inequality

f) What is probability density function?

g) What is critical region?

h) What is internal estimation?

i) What are Type - I and Type - II errors?

j) Differentiate between large and small sample tests.

k) What is quality control?

l) What do you mean by test of significance? (9x2)

UNIT – I

II. a) What is growth curve? Explain exponential and modified exponential growth curves.

b) Fit a modified exponential curve:-

Years	1995	1996	1997	1998	1999	2000
Y	12	15	25	35	85	210

(2x9)

III. Differentiate between partial and multiple correlation. From a data related to height (x_1), weight (x_2) and age (x_3) of 20 students of college, the following correlation coefficients are obtained:-

$r_{12} = 0.75$, $r_{13} = 0.72$ and $r_{23} = 0.52$

Contd.....P/2

Find partial correlation coefficient $r_{12.3}$ and multiplier correlation coefficient $R_{1.23}$. Also interpret the coefficients.

(18)

UNIT – II

IV. a) The odds that a book will be favorable reviewed by three independent critics are 5 to 2, 4 to 3 and 3 to 4 respectively. What is probability that of three reviews, a majority will be favorable?

b) The sizes of components provided by a machine are normally distributed. It is required that the size should lie between 15.63 cm and 15.84 cm and it is found that 2.872% of production is rejected for being oversized and 1.072% of the production is rejected for being undersize. Find mean and standard deviation of the distribution of the component sizes. (2x9)

V. a) A machine is producing 4% defectives. What is the probability of getting atleast 4 defectives in a sample of 50 using (i) binomial distribution (ii) Poisson approximation.

b) In a bolt factory, machines A, B, C manufacture respectively 25%, 35% and 40% of the total. Out of their output 5,4, & 2 percent are known to be defective bolts respectively. A bolt is drawn at random from the product and is found to be defective. What are the probabilities that it was manufactured by machine A. (2x9)

UNIT – III

VI. a) Write a note on point estimates.

b) Discuss the types of sampling. (2x9)

VII. a) A random sample of 700 units from a large consignment should that 200 were damaged. Find 95% and 99% confident limits for the proportion of damaged units in the consignment.

b) Explain (i) limit of significance (ii) statistical hypothesis and (iii) maximum likelihood estimates. (2x9)

UNIT – IV

VIII. The random samples were drawn from two populations and the following results were obtained.

Sample - I	16	17	18	19	20	21	22	24	26	27	
Sample - II	19	22	23	25	26	28	29	30	31	32	35

Obtain estimates of variances of population and test whether the two populations have the same variances. (18)

IX. Explain the merits and demerits of non-parametric tests? Two women are randomly selected and their weights (in lbs) before and after they are put on a new diet are recorded. The data are:-

Weight before diet	180	178	165	200	160	145	170	210	185	155
Weight after diet	174	181	157	198	152	150	160	205	178	160

Use sign test at 5% l.o.s. to test the claim that the new weight loss diet is effective.

(18)

x-x-x