Roll No. ....   **Total Pages : 04**

MDH/M-20   **19508**
STATISTICAL METHODS FOR ECONOMISTS-II
Paper 403-E

Time : Three Hours]   [Maximum Marks : 80

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. **1** is compulsory.

1. Explain briefly (any *eight*) :
   (i)   Equally likely events
   (ii)   Conditional probability
   (iii)   Sampling error
   (iv)   Null and alternative hypothesis
   (v)   Wilcoxon signed rank test
   (vi)   Parametric test *Vs*. Non-parametric test
   (vii)   Expected opportunity loss criteria
   (viii) Control chart
   (ix)   Z-test.   **8×2=16**

Unit I

2. (a)   State and prove Addition theorem of probability.

          8

(b) A box contains 12 bulbs out of which 5 are defective. Three bulbs are drawn at random. What is the probability that among selected bulbs at least 2 are defective ? **8**

3. What is Normal Distribution ? Discuss its properties in detail. **16**

Unit II

4. Write notes on the following :

(i) Non-random Sampling method. **8**

(ii) Sampling distribution of sample mean. **8**

5. A research was conducted to understand whether women have a greater variation in attitude on political issues than men. Two independent samples containing the following information were used for the study :

Sample ↓	Men	Women
Size	31	41
Variance	80	120

Test whether the difference in attitude toward political issues in significant at 5 per cent level of significance. **16**

Unit III

6. In an experiment on immunization of cattle from diseases, the following results were obtained :

	Affected	Not Affected
Vaccinated	12	26
Not vaccinated	16	6

Calculate the Chi-square statistic and discuss the effect of vaccine in controlling the diseases. **16**

7. (a) Discuss the steps involved in Kruskal-Wallis test. **8**

(b) Explain the applications of Sign test. **8**

Unit IV

8. The marketing department of a company calculated the profits for various strategies in case of three possible states of nature as under :

Strategies/Acts	States of Nature		
	S_1	S_2	S_3
A_1	70	30	15
A_2	50	45	0
A_3	30	30	30

Which strategy/act should the concerned decision maker choose on the basis of :

    (i)   Maximin criterion

    (ii)   Maximax criterion

    (iii) Minimax Regret criterion

    (iv) Laplace criterion.   **16**

9. (a) Give the meaning, advantages and limitations of statistical quality control.   **8**

     (b) Distinguish between Process control and Product control. How are control limits computed ?   **8**