Roll No. ....

Y – 3185

M.A./M.Sc. (Fourth Semester) EXAMINATION, March/April-2021

MATHEMATICS

Paper – 410

ADVANCED MATHEMATICAL STATISTICS

Time : Three Hours

Maximum Marks : 85 (For Regular Students)   *Minimum Pass Marks : 29*

Maximum Marks : 100 (For Private Students)   *Minimum Pass Marks : 34*

Note—Attempt *all* questions.

Unit-I

1. Calculate Karl Pearson's coefficient of correlation for the data given below :

   17/20

   $x :$ 48, 53, 64, 50, 58, 60, 63

   $y :$ 54, 55, 53, 60, 62, 70, 48

Unit-II

2. Derive Poisson's distribution as a limiting form of Binomial distribution. Obtain its mean, variance and m.g.f.   17/20

Unit-III

3. If T_1 and T_2 be two unbiased estimator of $\gamma(\theta)$ with variances σ_1^2, σ_2^2 and correlation ρ, what is the best unbiased linear combination of T_1 and T_2 and what is the variance of such combination.   17/20

Unit-IV

4. Explain Mann Whitney U-test   17/20

   A test is administered to a random sample of 10 students of A-university. The same test is also administered to a random sample of 11 students of B-university. There scores are given as :

   A : 70, 68, 73, 81, 66, 56, 62, 75, 83, 48

   B : 72, 67, 74, 65, 63, 77, 71, 60, 76, 61, 64

   Test the hypothesis that the two university students have same performance.

Unit-V

5. Explain, Randomised block design, its advantages and carryout its statistical analysis for one observation per experimental unit.   17/20

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