**M.Com. Part-I Examination, 2020 (DDE)**
**Subject: Commerce**
**Paper: 4**
**(Business Statistics)**

**Time: 2 Hours** **Full Marks: 40**

*The figures in the margin indicate full marks.*
*Candidates are required to give their answers in their own words as far as possible*

**Answer any four questions.** **10 X 4 =40**

1. Explain the following terms : 5+5
   (a) Multiple correlation coefficient
   (b) Partial regression coefficient

2. (a) Explain the relationship between Yule's coefficient of association and Yule's coefficient of colligation.

   (b) Distinguish between Complete association and Complete dissociation. 5+5

3. (a)Distinguish between pair-wise independence and mutual independence of n events.

   (b) State and prove the theorem on total probability for three events which are not necessarily mutually exclusive. 5+5

4. (a) Fill up the blanks in the following table:

| f(x) | Type of variate | Mean | Variance |
|---|---|---|---|
| Binomial Distribution | | | |
| Poisson Distribution | | | |
| Normal Distribution | | | |

(b) Distinguish between Point estimation and Interval estimation. (5+5)

**PTO**

5. A population consists of only four members having the following values: 22, 24, 26, 28.

Derive the sampling distribution of sample mean in case of SRSWR. Also show that the mean of sample means is equal to population mean, but the variance of sample means is not equal to the population variance. 10

6. (a) Define Analysis of Variance with its underlying assumptions.

(b) An experimenter wished to study the effect of 4 fertilizers on the yield of a crop. He divided the field into 24 plots and assigned each fertilizer at random to 6 plots. Part of the results is shown below:

| Source | df | SS | MS | F | $F_{0.05}$ |
|---|---|---|---|---|---|
| Between fertilizer | -- | 2940 | -- | -- | 3.10 |
| Within fertilizer | -- | -- | -- | | |
| Total | -- | 6212 | | | |

Compute the above table by filling the values marked by (--).

[5+5]