EASTERN UNIVERSITY, SRI LANKA

DEPARTMENT OF MATHEMATICS

FIRST YEAR EXAMINATION IN SCIENCE - 2016/2017

SECOND SEMESTER (MARCH-2019)

CC 106 - BIO STATISTICS

(REPEAT)

Answer all questions. **Time: One hour.**

Calculator and Statistical table will be provided.

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1. (a) Compare the variances of two samples in the following table:

Sample 1	0	4	2	8	9
Sample 2	2	5	7	4	3

[20 marks]

(b) A researcher wants to find the relationship between two variables X and Y. He has collected the following data from 5 units.

X	2	4	6	8	10
Y	10	17	22	34	43

i. Draw a suitable graph and comment on the relationship between X and Y.

[10 marks]

ii. Find the Pearson's correlation coefficient for the sample and interpret it.

[20 marks]

iii. Fit a regression model of the form of $Y = \beta_0 + \beta_1 X$. **[20 marks]**

iv. Check the significance of parameters β_0 and β_1 at 5% significance level and interpret the significant parameter/s. **[25 marks]**

v. Estimate the average of Y when the value of X is 2.5. **[05 marks]**

2. (a) Suppose that the probability of selecting an infertile seed from a lot is 0.2. seeds are selected randomly, what is the probability that at least 8 seeds fertile. [25 m

(b) It has been observed by a researcher that average number of insects in a certa plant in a day is 10. Find the probability that a randomly selected plant wi a maximum of 3 insects. [25 m

(c) Suppose that life spam (in days) of a certain species is normally distribute average life spam of 400 days and variance of 225. What is the probability th life spam of a randomly selected individual will be between 350 days and 39 [25 m

(d) For testing the hypothesis: $H_0 : \mu = 25$ *vs* $H_1 : \mu \neq 25$, a sample has bee from a normally distributed population. Test the hypothesis at 5% signi level by using the following summarized data of the sample, given with th notations: $n = 15$; $\overline{X} = 22$; S^2=9. [25 m

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