THIRD SEMESTER M.Sc. DEGREE EXAMINATION, NOVEMBER2016

(CUCSS - PG)

(Environmental Science)

CC15P ES3 C15 -Biostatistics, Quantitative Methods and EcoInformatics

(2015 Admission)

Time : Three Hours   Maximum : 36 Weightage

I. Answer *all* questions. Each question carries **1** weightage

1. RDBMS
2. Relational Operators
3. LAN and WLAN
4. Open Source Software
5. Network Protocols
6. Artificial Neural Networks
7. Maximum Likelihood Algorithms
8. MS Excel
9. Chi-Square
10. Differentiate Normal and Binomial distribution
11. Skewness
12. Linear Regression Models
13. Probability Axioms
14. Sample and Population variance

(14 x 1 = 14 weightage)

II. Answer *any seven* questions. Each question carries **2** weightage

15. Write down the merits and demerits of mean, median and mode.
16. Write a note on statistical distribution of data.
17. A bag contains orange and green balls in the ratio 1 : 3. If 3 balls are drawn from it, find the chance that
    (a) All the 3 balls are orange
    (b) There will be at least one green ball
18. State the laws of large numbers. Write the differences between the weak and strong law.
19. Distinguish between parametric and non-parametric tests.
20. What are the characteristics of SQL? Explain SQL Architecture.
21. Define correlation. Explain the advantages and limitations of Pearson's Coefficient Correlation.
22. Calculate the coefficient of correlation for the following data.

Soil Depth	20	40	60	80	100	120
% SOC	44	21	15	11	9	8

23. Calculate the quartile and mean deviation for the following data

Class	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60
F	8	32	12	6	29	48

24. Compute the trend value using least square method from the data given below

Year	2009	2010	2011	2012	2013	2014
Production (in Tons)	12	13	14	18	23	27

(7 x 2 = 14 weightage)

III. Write an essay on *any two* of the following. Each question carries 4 weightage

25. Calculate the Variance, CV, SD, Pearson's coefficient of skewness of the following:

Class	0 – 20	20 – 40	40 – 60	60 – 80	80 - 100
f	30	70	100	40	20

26. Discuss about multivariate statistical techniques applied in Environmental Sciences

27. Bacterial infections in urinary tracts are the most common infection experienced by humans. A physician is interested in the efficiency of a new drug in treating bacterial infections. He administers the drug to three groups of patientsof same sample size according to their age - infants, teens' and adults in four different dosages – 0 mg, 2mg, 4 mg and 6mg drug. The results obtained are given in the table. Higher scores reflect better performance. Conduct a two ANOVA and draw an inference to the results.

		Drug Dosage			
		A1 (0 mg)	A2 (2 mg)	A3 (4 mg)	A4 (6 mg)
Age Group	Infants	5	8	12	12
	Teens'	8	8	15	12
	Adults	6	5	16	10

28. Briefly explain the applications of ecoinformatics in environmental studies.

(2 x 4 = 8weightage)

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