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DATE:05-03-22

Registration number:

**ST. JOSEPH’S COLLEGE (AUTONOMOUS), BANGALORE-27**

SEMESTER EXAMINATION: OCTOBER 2021

(Examination conducted in March 2022)

**B.Sc. ENVIRONMENTAL SCIENCE III-SEMESTER**

**ES 318: Environmental Microbiology, Environmental Biotechnology and Biostatistics**

**Time: 2½Hours Max. Marks: 70**

**This paper contains two printed pages and three parts.**

**Instruction: Draw diagrams wherever necessary.**

**PART-A**

**Answer any ten of the following. 10×2=20**

 1. What are environmental determinants?

 2. What are extremophiles? Give an example.

 3. What is a droplet infection? Give an example.

 4. What is microbial bioremediation?

 5. What are xenobiotics? Give an example.

 6. What is a transgenic plant? Give an example.

 7. Define Biostatistics.

 8. Differentiate between standard deviation and coefficient of variance.

 9. What is an interval scale? Give an example.

10. Compare and contrast between a bar diagram and histogram.

11. Calculate median for the following data.

 10, 12, 13, 10, 11, 15, 17, 11

12. Write the formula for chi square test.

**PART-B**

**Write explanatory notes on any four of the following. 4×5=20**

13. Effect of salinity on microbes

14. Air borne viral infections

15. Composting

16. Scatter diagrams

17. Depict the Pie chart for the following data.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Kharif Crops | Rice | Maize | Sorghum | Bajra |
| Yield Quintals/Acre | 10 | 5 | 2.5 | 2.5 |

18. Compute the Standard Deviation for the following data.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Size of Paramecium (µm) | 50 | 100 | 150 | 200 | 250 | 300 |

 **PART-C**

**Answer all questions. 10×3=30**

19. Discuss the effect of temperature on microbes.

 **OR**

 .Give an account of water related infections.

20. Explain the bioremediation a contaminated aquifer with a suitable case study.

 **OR**

 . Explain the random and non random sampling techniques.

21. Calculate Karl Pearson correlation coefficient for the following data**.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| DO, mg/L | 7.0 | 6.0 | 5.0 | 4.0 | 3.0 |
| BOD, mg/L | 30 | 60 | 90 | 120 | 150 |

**OR**

 Compute ‘t’ Test for the following Diastolic BP of 5 patients before and after treatment by

 ‘Diovan’ tablet. Interpret the result. **Table value at df 8 on *p* .05 is 2.306**.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Before Treatment | 115 | 110 | 100 | 95 | 90 |
| After Treatment | 90 | 90 | 85 | 80 | 75 |