# LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

**M.Sc.** DEGREE EXAMINATION – **ZOOLOGY**

THIRD SEMESTER – APRIL 2017

## ZO 3950- GENOMICS, METAGENOMICS & EPIGENETICS

Date: 26-04-2017 Dept. No. Max. : 100 Marks
Time: 09:00-12:00

### Part-A

**Answer all the questions** **(10×2=20 Marks)**

1. What are the two types of genome mapping? Define them.
2. How are enhancers different from silencers?
3. Explain the types of alignment methods for sequence analysis.
4. Describe how microarrays are used to study protein expression.
5. Metagenomics can also be referred to as community or environmental genomics. Justify.
6. How is the identification of microbes done in a metagenomic study?
7. Give an example to explain the application of chemical ecology.
8. Comment on any two metagenomic studies on mesopelagic ocean waters.
9. Describe the process of induced pluripotency with the help of a suitable diagram.
10. What are the epigenetic mechanisms involved in thalassemia and obesity?

### Part-B

**Answer any FOUR questions** **(4×10=40 Marks)**

11. Discuss how genetic mapping is done.
12. Explain the different methods of transcriptome analysis.
13. Describe the working procedure of Helicos HeliScope Sequencer.
14. Give an account of the metagenomics of soil microbial community. Add a note on the challenges in soil metagenomic studies.
15. Write a note on position effect variegation in *Drosophila* sp.
16. Discuss the eukaryotic gene structure.

### Part-C

**Answer any TWO questions** **(2×20=40 Marks)**

17. Describe the different approaches for carrying out large scale mutagenesis.
18. Discuss the soil resistome and human microbiome project.
19. Write a note on the ecological inferences that can be obtained from metagenomic studies giving suitable examples.
20. Explain the following:
    (i) Epigenetics in cancer and autism
    (ii) Histone code hypothesis

$$$$$$$$