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Reg. No. : .....

Name : .....

Third Semester M.Sc. Degree Examination, January 2018
Branch : Environmental Sciences
ES 232 : ENVIRONMENTAL GENETICS, MICROBIOLOGY & BIOTECHNOLOGY
(2013 Admission Onwards)

Time : 3 Hours Max. Marks : 75

I. Write brief answers for **any 10** of the following : **(10×2=20 Marks)**

1) Frame shift mutation.
2) Types of rRNA in eukaryotic cell.
3) Wobble hypothesis.
4) Spliceosome.
5) Triploidy.
6) Methanogenes.
7) Persistant Organic Pollutants.
8) Quadrant streak method.
9) Bacteria involved in nitrification process.
10) Xenobiotics.
11) *Ex-situ* bioremediation.
12) Biomining.

II. Give a brief account of **any 5** of the following : **(5×5=25 Marks)**

13) What is meant by central dogma of molecular genetics ? Briefly describe the role of key players in transfer of genetic information from DNA to protein.
14) Comment on the significance and practical applications of mutations.
15) Write notes on metagenomics and its potential to overcome the limitations of culture dependent methods.

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16) Briefly describe the principle behind DGGE and its potential applications in research.

17) Comment on the use of microbes in waste water treatment.

18) Discuss environmental implications of release of GMO's into the environment.

19) Describe the processes in sulphur cycle and the role of bacteria in various processes of sulphur cycle.

III. Write an essay on **any 2** of the following : **(2×15=30 Marks)**

20) Point mutations and their effect on phenotypes with special reference to the mutagens.

21) Bioremediation strategies in environment management. Comment on utility of rich nutritional and physiological diversity of prokaryotes in various bioremediation strategies.

22) Use of microorganisms in industrial biotechnology.

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