B.Sc. (Honours) Examination 2017
Semester–VI
Botany
BBE–63 (Elective)
(Biofertilizers and Biopesticides)

Time: Three Hours **Full Marks: 40**

Questions are of value as indicated in the margin.

Answer question No. **1** and ***any four*** from the rest.

1. Answer any **eight** questions of the following: 1×8=8
   (a) What are the basic steps involved in estimation of nitrogen by Kjeldahl method?
   (b) Name one stem nodulating *Rhizobium* and its symbiotic partner.
   (c) State two cellular functions of Mg^{++}.
   (d) State any possible mechanism of phosphate solubilization by PSM.
   (e) How do *Rhizobium* colonies differ from *Agrobacterium* colonies when they grow on YEMA medium?
   (f) Name two natural sources of phosphate.
   (g) What is plantibody?
   (h) What is siderophore?
   (i) What biochemical reaction is catalyzed by ACC deaminase?
   (j) Name two stickers commonly used during field application of biopesticides.
   (k) Name two bacterial biocontrol agents.
   (l) State two cellular functions of phosphorus.
2. Describe the structure and function of molybdenum dependent nitrogenase. How many ATP are needed to reduce one molecule of nitrogen into two molecules of ammonia. Which metal cofactor can replace molybdenum of a nitrogenase? What kind of regulations does occur in Nif gene expression under N-limiting conditions and in presence of oxygen? 4+1+1+2=8
3. Name two earthworm species which are commonly used in making vermicompost? Describe the process of vermicomposting. How more values can be added in vermicompost? 2+4+2=8
4. Write notes on: 4+4=8
   (a) Acetylene reduction assay
   (b) Isolation of potent phosphate solubilizing bacteria (schematic presentation)
5. What is Bt-toxin? How can it help in generating insect resistant plants? State two drawbacks in using Bt crops. 2+4+2=8
6. What is biological control? Describe the role of hyperparasites and PGP organisms in control of plant pathogens. What are the principal factors considered before preparation of a biopesticide. 1+4+3=8
7. Write notes on: 4+4=8
   (a) Survivability test
   (b) Isolation protocol of a bio-pesticide organism

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