RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES

B.Sc. (General) Degree in Applied Biology
Third Year - Semester I Examination – November/December 2016
BOT3106 – BIOLOGICAL NITROGEN FIXATION AND ITS APPLICATIONS

Time: One and half (1 ½) hours

Answer three (3) questions only

1. Soybean (*Glycine max*) is nodulated by *Bradyrhizobium japonicum.* You are asked to produce these *Bradyrhizobium* inoculums for the farmers to use as a seed treatment before planting the soybean seeds in the field. Describe the steps involved in the production of *Bradyrhizobium* inoculums in the laboratory.

2. Explain the mechanisms adopted by different nitrogen fixing organisms to protect the nitrogenase enzyme from oxygen damage during aerobic growth.

3. Assess the applications of biological nitrogen fixation in forestry and agriculture.

4. a) Explain the functional root nodule formation of *Rhizobium* spp. with specific legume hosts.

   b) Discuss the role of *Rhizobium* spp. as plant growth promoting rhizobacteria (PGPR) in paddy cultivation.

END