RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES

B.Sc. (General) Degree in Applied Sciences
First Year – Semester II Examination – November/December 2016

BIO 1207 – PLANT ANATOMY

Time: Two (02) hours

Answer any four (04) questions.

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1. Three basic tissue systems are found in any organ of plants; namely, dermal system, ground system and vascular system.

   a) Draw a T.S. of a typical dicotyledonous stem at its primary growth (line drawing only) and show the distribution of three tissue systems in it. (25 marks)

   b) Indicate the distribution of parenchymatous, collenchymatous and sclerenchymatous tissues in the above diagram. (35 marks)

   c) List the role of parenchyma, collenchyma, and sclerenchyma in the primary plant stem of a dicotyledonous plant in different regions. (25 marks)

   d) Explain briefly the primary function of parenchyma within the hypodermis and/or peripheral general cortex in the stem of an annual herbaceous plant. (15 marks)

2. Leaf is the principal lateral appendage (organ) of the stem of vascular plants.

   a) With aid of a labeled diagram, describe the leaf anatomy of a typical dicotyledonous plant and describe the function/s of each anatomical entity in the structure. (40 marks)

   b) Illustrate, using labeled simplified diagrams only, the six (6) basic types of stomata recognized considering their subsidiary/accessory cells and/or neighboring ordinary epidermal cells. (30 marks)

   c) With aid of a line diagram/s, briefly demonstrate how the anatomy of circular leaf of onion (*Allium cepa*) deviates from that of a typical monocotyledonous leaf. (30 marks)

3. Plants are comprised of an assortment of tissues, regardless of their size.

   a) What is meant by a **plant tissue**, a **meristematic tissue**, a **permanent tissue**, a **simple plant tissue** and a **complex plant tissue?** (30 marks)

   b) Provide **five (5)** evidences to prove that the epidermis of plants is a complex tissue. (25 marks)

   c) Justify that the epidermis performs a variety of functions stating **eight (8)** anatomical variations in epidermal cells. (45 marks)

4. A covering of trichomes on any part in shoot system of plant is referred to as an indumentum.

   a) Describe briefly, the different criteria used in description and classification of plant trichomes. (50 marks)

   b) Explain, giving **10 examples**, that the trichomes are essential in plant life. (50 marks)

5. Distinguish the following pairs.

   a) Heartwood and sapwood (20 marks)

   b) Hardwood and softwood (20 marks)

   c) Protostele and siphonostele (20 marks)

   d) Apical meristem and lateral meristem (20 marks)

   e) Periderm and bark (20 marks)

END