FEDERAL UNIVERSITY OF TECHNOLOGY, OWERRI
SCHOOL OF AGRICULTURE AND AGRICULTURAL TECHNOLOGY
DEPARTMENT OF SOIL SCIENCE TECHNOLOGY
2005/2006 RAIN SEMESTER EXAMINATIONS

SST 502: **SOIL AND PLANT WATER RELATIONS**
INSTRUCTION: **ANSWER ANY 5(FIVE) QUESTIONS**
TIME ALLOWED: **3 HOURS**

QUESTION 1

(a) Discuss the importance of soil texture and soil structure in soil – water – plant relations.
(b) What properties of the soil determine the percentages of these three classes of soil water --- gravitational, capillary and hygroscopic?
(c) Briefly discuss the importance of porosity in plant and crop production.

QUESTION 2

(a) Describe the various methods of measuring soil water pointing out the advantages and disadvantages of each method.
(b) Of what values is water information?

QUESTION 3

(a) With the aid of a diagram describe the soil moisture characteristics of sandy, loamy and clayey soils.
(b) What is meant by soil moisture stress and how does it affect plant growth?

QUESTION 4

(a) Discuss the relationship between rooting characteristics of plants and their moisture use.
(b) How do plants service periods of water stress?

QUESTION 5

(a) Briefly explain the relationship between climate and soil salinity.
(b) What is meant by alkali soil and saline soil?
(c) Briefly describe the measures adopted in the reclamation of saline and alkali soils.

QUESTION 6

(a) Distinguish between Evapotranspiration (ET) and Potential Evapotranspiration (PET).
(b) Discuss briefly the factors that affect evapotranspiration.
(c) Define peak period of consumptive use.

QUESTION 7

(a) Write briefly on the following: (i) Field capacity (ii) Moisture equivalent (iii) Wilting co-efficient (iv) Available water
(b) Distinguish between the following: (i) Percolation and infiltration (ii) Qualitative permeability and quantitative permeability (iii) Hydraulic head and hydraulic gradient