OBAFEMI AWOLOWO UNIVERSITY, ILE IFE, **NIGERIA**

FACULTY OF SCIENCE

DEPARTMENT OF MICROBIOLOGY

B.Sc. (Microbiology) Degree Examination

Semester: Harmattan 2010/2011

Date: 20th July, 2011

Course Code: MCB307

Time Allowed: 2 Hr 30 Min.

Course Title: Soil Microbiology

Instruction: Answer ALL questions with each Section on a separate Booklet. Write your Examination Number and your Department on your answer Booklet.

SECTION A

1(a) Discuss the events leading to the reduction of sulphate to sulphur in anaerobic condition through the action of named microorganisms.

(b) You are provided with two different strains of bacteria, how would you proceed to identify the nitrogen-fixer between the test organisms?

2(a) Write briefly on the importance of microorganisms in solubilizing plants nutrients in soil using phosphorus as a case study.

(b) How would you proceed to enumerate the 'microbial population in 1g of soil sample by cultural techniques?

SECTION B

3(a) What is lignin?

(b) State the important properties of lignin.

(c) With suitable diagram explain the biochemistry of lignin degradation.

4 (a) write short notes on the followings:

(i) Biomagnification (ii) Single Cell Protein (iii) Methanogenesis (iv) Surfactant

(v) Polychlorinated biphenyls.

SECTION C

5 (a) With a suitable diagram illustrate a typical soil profile.

(b) Write short notes on the activity of the following organisms in the soil:

(i) Algae (ii) Actinomycetes (iii) Bacteria (iv) Fungi.

/...2

6 (a) What is organic matter?

6 (b) Explain briefly how you can determine the rate of organic matter decomposition.

(c) Discuss briefly how the following factors affect organic matter decomposition:

(i) Cultivation

(ii) Moisture & Aeration

(iii) Plant material

(iv) Temperature.