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DEPARTMENT OF MICROBIOLOGY

2017/2018 HARMATTAN SEMESTER EXAMINATION

MCB 307: Soil Microbiology

INSTRUCTION: Attempt TWO questions from EACH Section

Time: 1hr 30mins

SECTION A

- ✓ 1a. Define the term Pesticide
- b. Identify four ways by which pesticides enter the soil environment.
- c. Highlight five effects of pesticides on non-target and beneficial microorganisms in soil.
- d. State five roles of microorganisms in the soil
- ✓ 2a. Define the following : (i) Biodegradation (ii) Bioremediation (iii) (iv) Biostimulation (v) Bioaugmentation.
- b. What are Xenobiotics?
- c. State one organism that has been used successfully for bioremediation of the chemical, 2,4, 5-T in soil samples during laboratory experiments.
- d. Differentiate between *in situ* and off-site bioremediation.
- 3a. What is an enrichment culture technique?
- b. Write concisely on biodeterioration of paper and other cellulosic materials
- c. Explain the process involved in biogenesis of methane gas from A Named agricultural waste

SECTION B

- ✓ 4a. Briefly explain the following associations among soil microorganisms
 - i. Parasitism
 - ii. Commensalism
 - iii. Symbiosis
 - iv. Amensalism
- bi. What are Mycorrhizae
- ii. List two importance of this peculiar association
- ✓ 5a. Make an annotated diagram of the Nitrogen cycle ensuring relevant organisms for each stage are cited in the cycle
- bi. List two organisms capable of fixing carbon —
- ii. Mention two complex organic substrate rich in carbon
- 6a. Explain the processes involved in mineral transformation by microorganisms
- b. What are biominerals