



NATIONAL OPEN UNIVERSITY OF NIGERIA
FACULTY OF SCIENCES
DEPARTMENT OF ENVIRONMENTAL SCIENCE AND RESOURCE MANAGEMENT
Plot 91, Cadastral Zone, Nnamdi Azikwe Expressway, Jabi, Abuja
2020_2 EXAMINATIONS

COURSE CODE: ESM341

COURSE TITLE: INTRODUCTION TO INSTRUMENTATION IN ENVIRONMENTAL SCIENCE

CREDIT: 2 Units

TIME ALLOWED: 2 Hours

Instruction: Attempt question number ONE (1) and any other THREE (3) questions. Question number one (1) carries 25 marks, while the other questions carry (15) marks each.

- 1a. Describe two sampling techniques in quadrat survey (4 marks)
- 1b. Outline and give examples of types of instrumentation in Environmental Science (6marks)
- 1c. what is remote sensing (3marks)
- 1d. using relevant diagram identify the remote sensing process from the beginning to the end (12marks)

- 3a. What are direct reading instruments (3marks)
- 3b. identify 5 examples of direct reading instruments (5marks)
- 3c. what are replicates samples and why are they use? (7marks)

- 4a. briefly discuss 3 types of samples you know (6marks)
- 4b. identify 6 main reasons for sampling instead of doing a census (6marks)
- 4c. explain the term sample bias (3marks)

- 5a. describe the principle of absorption (3marks)
- 5b. describe the process of the operation of Vacutainer Syringe system (3marks)
- 5c. Make a contrast among AAS, Mass Spectrometer and chromatography system (9 marks)

- 6a. What Are pH and Electrical Conductivity? (4marks)
- 6b. How are pH and Electrical Conductivity Measured? (5marks)
- 6c. states three protocols when Measuring EC of a liquid sample using a meter and probe (6marks)