National Open University of Nigeria
Plot 91, Cadastral Zone, Nnamdi Azikiwe Expressway, Jabi - Abuja
Faculty of Science
2021 EXAMINATIONS 1234

COURSE CODE: ESM 341
COURSE TITLE: Introduction to Instrumentation Measurements and Field Methods 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.

1. (a) Define the following term (i) Instrumentation (ii) Remote sensing (iii) Global Position System (iv) Chromatography (8marks)
   (b) Describe the features of grab air sampling (3marks)
   (c) with a suitable diagram describe the 7 elements that comprise remote sensing process technique from beginning to the end (12marks)
   (d) List two Protocols and Concerns for pH and EC Measurements (2marks)

2. (a) For any form of Quadrat survey describe the interval at which samples are taken (6marks)
   (b) Describe how pH and Electrical Conductivity Measured (4marks)
   (c) Identify 5 parts of a Colorimeter (5marks)

3. (a) What is the purpose of sampling in research (3marks)
   (b) Identify 3 steps in which a liquid sample is normally turned into an atomic gas (6marks)
   (c) Give 3 examples Integrated Air Samplers (6marks)

4. (a) Describe 3 fixed stations in a metrological station (9marks)
   (b) Itemize three types of solar radiation measurement (3marks)
   (c) Identify 3 criteria for the selection of a tape recorder (3marks)

5. (a) Identify 2 kinds of air sampling instrumentation (3marks)
   (b) Distinguish between Sampling, Sample and Population (6marks)
   (c) Define the following (i) Sampling error (ii) Chance (iii) Sampling bias