ELIZADE UNIVERSITY
FACULTY OF BASIC AND APPLIED SCIENCES
DEPARTMENT: PHYSICAL AND CHEMICAL SCIENCES
PROGRAMME: APPLIED GEOPHYSICS EXAM TITLE: DEGREE EXAMINATION
COURSE CODE & TITLE: AGP 423 – ENVIRONMENTAL GEOPHYSICS
TIME ALLOWED: 2 ½ hrs SEMESTER/SESSION: FIRST / 2018/2019
INSTRUCTIONS: Answer QUESTIONS 3 AND 5, and any other TWO questions.
*Write your **matriculation number** only on your answer script(s) and NOT your name*

HOD's SIGNATURE

1. (a) Discuss the impact of human upon the environment.
   (b) (i) Discuss the application of Ground Penetrating Radar (GPR) in environmental geophysics.
   (ii) Mention **three (3)** limitations of GPR in environmental geophysics?

(12 marks)

2. (a) What are the relevance and implications of Longitudinal Conductance and Transverse Resistance in groundwater vulnerability studies. State their empirical formulae and define all terms.

   (b) The greatest single environmental problem connected with petroleum production is oil spillage. List and discuss five (5) environmental impacts often associated with oil spillage on the ecosystem.

(12 marks)

3. (a) Corroded steel drums containing toxic chemicals were buried at depth at various unidentified locations within an environment. A proposed construction activities involving excavation activities at the site is likely to pose the risk of puncturing these drums; which may result in serious threat to lives.
   (i) What geophysical method would be the best choice to be used in locating the drums?
   (ii) Briefly explain the principle of the method.
   (iii) Show a typical profile over the steel drums based on the method you considered most appropriate.

   (b) Highlight **three** advantages derivable from adopting geophysical methods in environmental impact investigation.

(18 marks)

4. (a) Briefly discuss the electrical resistivity method as applied in solving the following environmental problems:
   (i) Delineation of contamination plume from waste dumps.
   (ii) Mapping of salinity in farmlands.
   (iii) Mapping of landfill site prior to establishment of landfill.

(b) Outline **three (3)** groundwater remediation and **three (3)** soil remediation technologies.
(12 marks)

5. (a) An abandoned landfill in Ilara-Mokin town is suspected to constitute health hazard to inhabitants around the area. State the objectives of an environmental geophysicist in the investigation of the landfill.

(b) Discuss the environmental impacts of the under listed in a community:
(i) Agricultural practices
(ii) Dumpsites/Landfills
(iii) Mining activities.
(18 marks)