



**CRAWFORD UNIVERSITY**  
**IGBESA**

FAITH CITY, IGBESA, OGUN STATE

2017/2018 RAIN SEMESTER EXAMINATIONS

COLLEGE OF NATURAL AND APPLIED SCIENCES

DEPARTMENT: PHYSICAL AND EARTH SCIENCES

PROGRAMME: GEOLOGY AND MINERAL SCIENCES

COURSE TITLE GEOCHRONOLOGY AND PRECAMBRIAN GEOLOGY OF AFRICA

COURSE CODE: GEM 204: TIME ALLOWED: 2HRS 30 MINUTES

**INSTRUCTION: ANSWER QUESTION 1 AND ANY OTHER TWO**

1. a. A radioactive sample contains  $3.25 \times 10^{18}$  atoms of a nuclide that decays at a rate of  $3.4 \times 10^{13}$  disintegrations per 26 min.
    - i. What percentage of the nuclide will have decayed after 159 days?
    - ii. What is the half-life of the nuclide?
  - b. Write the decay equation for the disintegration of  $^{238}\text{U} \rightarrow ^{234}\text{Th}$  by alpha emission
  - c. If  $N = N_0 e^{-\lambda t}$ , derive an expression for t
2. a. In other to get two independent dates from the U-Pb system, two isochron equations can be written, what are they?
  - b. Highlight the applications of the U-Pb system.
3. Briefly describe the following:
    - i. Craton
    - ii. Continental Shield
    - iii. Shields
    - iv. Platforms
4. a. The African Continents essentially consists of five ancient Precambrian cratons, what are they? List and describe each.
5. a. Briefly describe the advantage of Ar-Ar dating method over K-Ar method
  - b. What are the limitations of K-Ar methods.