



CRAWFORD UNIVERSITY, IGBESA,

FAITH CITY, IGBESA, OGUN STATE

COLLEGE OF NATURAL AND APPLIED SCIENCES

GEOLOGY AND MINERAL SCIENCES PROGRAMME

2021/2022 HARMATTAN SEMESTER EXAMINATIONS

COURSE TITLE: HYDROGEOLOGY

COURSE CODE: GEM 463

TIME ALLOWED: 2hrs 30mins

INSTRUCTION: ANSWER ANY FOUR QUESTIONS ONLY.

1 a. Discuss the relationship between hydrogeology and hydrology?

b. Explain five (5) out of the following terms:

- | | |
|-------------------|---------------------------|
| i. Hydraulic head | v. Hydraulic Conductivity |
| ii. Porosity | vi. Transmissivity |
| iii. Permeability | vii. Specific Storage |
| iv. Water Content | viii. Specific Yield |

2 You have just been appointed as the General Manager of your State Water Corporation. On taking over the office, you discovered that the water supply system is almost comatose. Explain the steps you will take to ensure continuous water supply.

3 a. Explain the following terms:

- | | |
|---------------|--------------------|
| i. Aquifer | iv. Aquitard |
| ii. Aquiclude | v. Perched Aquifer |
| iii. Aquifuge | |

b. Highlight the differences between a confined aquifer and unconfined aquifer in terms of the following?

- | | |
|--------------|---------------|
| i. Depth | iv. Recharge |
| ii. Pressure | v. Saturation |
| iii. Purity | |

4 a. Explain the factors that determine the occurrence of groundwater in the following rock formations:

- | | |
|----------------|---------------|
| i. Sedimentary | ii. Limestone |
|----------------|---------------|

iii. Basement Complex

- b. What steps are involved in borehole development?
- 5
- a. On a map of Nigeria, give the locations of the 11 groundwater provinces in Nigeria?
 - b. Describe the three (3) methods of carrying out groundwater exploration.
- 6
- a. Give a detailed explanation of well development.
 - b. How do you prevent borehole failure?
 - c. Enumerate the solutions to borehole failure.

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