NATIONAL OPEN UNIVERSITY OF NIGERIA
Plot 91, Cadastral Zone, Nnamdi Azikwe Expressway, Jabi, Abuja
FACULTY OF SCIENCES
DEPARTMENT OF ENVIRONMENTAL SCIENCE AND RESOURCE MANAGEMENT
2025_1 EXAMINATION

Course Code: ESM 422
Course Title: Resource Evaluation
Credit Unit: 2 Credit Unit
Time Allowed: 2:30
Instruction: Attempt question number ONE (1) and any other TWO (2) questions. *Question number one (1) is compulsory and carries 30 marks, while the other questions carry equal marks (20) each*

1a. How does a landscape evolution model simulate changing terrain over time, and what factors does it typically consider? 6marks
1b. What are the advantages of using the Net Present Value (NPV) method in valuing mineral resource stocks, and how does it account for risks? 5marks
1c. In the Appraised Value Method, how are past exploration expenditures and warranted future costs used to determine the value of an exploration property? 4marks
1d. How does the Contingent Valuation Method CVM differ from revealed preference models? 4marks
1e. What is the primary purpose of Cost-Benefit Analysis (CBA) in decision-making? 5marks
1f. Why did the Contingent Valuation Method gain prominence in the 1980s? 6marks

2a. How have Landscape Evolution Models evolved over time and what applications do they have? 5marks
2b What is the Net Present Value (NPV) method, and how is it used in resource valuation? 5marks
NPV predicts net income flows over a resource's economic life by forecasting future revenues and discounting them using an appropriate cost of capital. It aligns with maximizing firm value and is used in capital budgeting. NPV has advantages like considering time value of money, incorporating risks, and providing flexibility, but it also has limitations concerning income flows and discount rate assumptions. 5marks
2c. Explain the Appraised Value Method and its application in resource valuation. **5marks**
2d. Explain the concept of isostatic rebound and its impact on landscape evolution. **5marks**

3a. How does the Electromagnetic (EM) method work, and what are its applications?
3b. Describe the Magnetotelluric (MT) method. How does it differ from other electrical techniques?
3c. What historical significance does the SP method hold, and how does it differ from others **5marks**
3d. How does the concept of induced polarization (IP) contribute to the detection of clay concentrations and conductive metallic mineral grains? 5marks

4a. What limitations are associated with the Market Price Method? **5marks**
4b. What are the limitations of the Net Price Method? 5marks
4c. Explain the El Serafy Method (User Cost Method) in valuing environmental resources. 5marks
4d. How does the Net Present Value (NPV) method work in valuing mineral resource stocks? 5marks

5a How does the level of detail required for resource evaluation vary based on different factors?
5b. How are different types of resources/assets valued in economic evaluation? 5marks
5c. What is resource estimation, and how is it conducted? 5marks
5d. Explain the Market Price Approach for resource valuation. 5marks