**CHUKA**  **UNIVERSITY**



**UNIVERSITY EXAMINATIONS**

**EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF AGRICULTURAL ECONOMICS AND BACHELOR OF SCIENCE IN NATURAL RESOURCE MANAGEMENT**

**AGEC 321: RESOURCE ECONOMICS**

**STREAMS: AGEC (Y3S2), NARE (Y3S2)** **TIME: 2 HOURS**

**DAY/DATE: MONDAY 14/04/2025** **8.30 A.M. – 10.30 A.M.**

**INSTRUCTIONS**

- **Answer all questions in section A and any three in section B**
- **Answer each question on separate pages**

**SECTION A**

**SECTION A: ANSWER ALL QUESTIONS (25 MARKS)**

1.

a) Resource classification is a fundamental concept in resource economics. Discuss the following categories of resources:

i) Exhaustible Resources **(2 marks)**

ii) Renewable Resources **(2 marks)**

iii) Flow Resources **(2 marks)**

b) The table below shows the relationship between the number of fishing trips and the total catch (in '000 kg) in a fishery. The cost per trip is Kshs 50,000.

| No of fishing Trips | Total catch ('000kg) |
|---|---|
| 10 | 500 |
| 11 | 550 |
| 12 | 600 |
| 13 | 640 |
| 14 | 670 |
| 15 | 690 |
| 16 | 700 |
| 17 | 705 |
| 18 | 710 |
| 19 | 710 |
| 20 | 710 |

Required:

i) Calculate the marginal catch (extra catch) for each additional fishing trip. **(2 marks)**

ii) Calculate the average catch per trip (in kg) for each number of fishing trips. **(2 marks)**

iii) Assuming a closed access fishery, determine the optimal number of fishing trips and explain the economic rationale behind your answer. **(5 marks)**

iv) Compare the optimal number of fishing trips in a closed access fishery with that of an open access fishery. What are the implications for resource sustainability? **(5 marks)**

c) Discuss the economic indicators that can be used to measure resource scarcity. **(5 marks)**

**SECTION B: ANSWER ANY THREE QUESTIONS (45 MARKS)**

2.

a) Discuss the economic principles that guide the sustainable management of the following resources:

i) Water Resources **(5 marks)**

ii) Mineral Resources **(5 marks)**

b) Define the concept of sustainable yield in the context of renewable resources. **(1 mark)**

c) Using a graph, illustrate the relationship between economic activity and environmental degradation, and explain how technology can shift this relationship. **(4 marks)**

3.

a) With the aid of a diagram, explain the concept of externalities in resource economics and how they can lead to market failure. **(5 marks)**

b) You have been commissioned to conduct a cost-benefit analysis for a proposed dam project in a rural area. Discuss the key factors you would consider in your analysis, including both economic and environmental impacts. **(10 marks)**

4.

a) Discuss the how the following economic tools that can be used to control pollution

i) Taxes **(2.5 marks)**

ii) Subsidies **(2.5 marks)**

b) Explain the concept of common property resources and discuss the challenges associated with their management. **(4 marks)**

c) Discuss the role of institutions and governance in the sustainable management of natural resources. **(6 marks)**

5.

a) Discuss the role of population in the context of land degradation and food security **(10 marks)**

b) Explain the concept of resource rent and how it can be used to promote sustainable resource management. **(5 marks)**

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