The Management University of Africa

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UNDERGRADUATE UNIVERSITY EXAMINATIONS

SCHOOL OF ARTS, HUMANITIES, DEVELOPMENT STUDIES AND SOCIAL SCIENCES (SADS

DEGREE OF BACHELOR OF ARTS IN DEVELOPMENT STUDIES

ENM 403 : VULNERABILITY TO ENVIRONMENTAL CHANGE

DATE: 27TH JULY 2026

DURATION: 2 HOURS

MAXIMUM MARKS: 70

INSTRUCTIONS:

1. Write your registration number on the answer booklet.
2. **DO NOT** write on this question paper.
3. This paper contains **SIX (6)** questions.
4. Question **ONE** is compulsory.
5. Answer any other **THREE** questions.
6. Question **ONE** carries **25 MARKS** and the rest carry **15 MARKS** each.
7. **Write all your answers in the Examination answer booklet provided.**

QUESTION ONE

Read the Case Study below carefully and answer the questions that follow:

CLIMATE CHANGE, VULNERABILITY AND ADAPTATION IN KENYA

Kenya has experienced increasing climate variability over the past decades, including prolonged droughts, unpredictable rainfall patterns, flooding events, and rising temperatures. These changes have significantly affected agriculture, water availability, livestock production, and urban livelihoods. Rural and urban communities have responded differently depending on their exposure, adaptive capacity, and socio-economic conditions.

In arid and semi-arid regions, households often rely on pastoralism and rain-fed agriculture, making them highly vulnerable to climate shocks. In urban areas, informal settlements face additional risks due to inadequate infrastructure, limited access to basic services, and weak institutional support systems. National and county governments, alongside development partners, have introduced adaptation programmes such as water harvesting projects, climate-smart agriculture, early warning systems, and disaster risk reduction initiatives.

Despite these efforts, significant gaps remain in understanding vulnerability, particularly in relation to poverty, inequality, and access to resources. Some adaptation interventions have also raised ethical concerns, especially where they disproportionately benefit certain groups while excluding others. Scholars argue that effective adaptation requires understanding vulnerability as a dynamic process shaped by exposure, sensitivity, and adaptive capacity. Resilience thinking further emphasizes the ability of systems to absorb shocks while maintaining essential functions.

However, challenges persist in translating theory into practice, particularly in integrating vulnerability assessments into planning frameworks at both national and local levels. Questions also remain about whether current adaptation pathways are sufficient to address long-term

climate uncertainty and transformation needs. Climate change governance in Kenya therefore continues to evolve, with increasing emphasis on participatory approaches, multi-level governance, and sustainable development strategies that enhance resilience across sectors.

Required:

a) Using the case study, analyze five ways in which climate variability increases vulnerability among rural and urban communities in Kenya. **(10 Marks)**

b) Referring to the case study, evaluate five factors that influence the effectiveness of adaptation interventions in reducing vulnerability. **(10 Marks)**

c) Propose five strategies that county governments can adopt to strengthen resilience and adaptive capacity in vulnerable communities. **(5 Marks)**

QUESTION TWO

A coastal county in Kenya has been experiencing frequent flooding, sea level rise, and coastal erosion, which have displaced communities and disrupted economic activities such as fishing and tourism. Local authorities are developing a vulnerability assessment framework to guide adaptation planning.

a) Examine five components of a vulnerability assessment framework that can be applied in the county.
(10 Marks)

b) Assess two ways in which vulnerability assessments can improve climate change decision-making at county level.
(5 Marks)

QUESTION THREE

A semi-arid region in Kenya is implementing adaptation programmes aimed at improving drought resilience through irrigation schemes, water harvesting, and livelihood diversification projects. However, some projects have failed due to poor community participation and weak institutional coordination.

a) Analyse five challenges that may undermine successful adaptation planning and implementation in such regions.

(10 Marks)

b) Evaluate two ways in which strengthening adaptive capacity can enhance sustainable development outcomes.

(5 Marks)

QUESTION FOUR

Climate change scientists emphasize the importance of resilience in managing environmental shocks. However, there is ongoing debate between ecological resilience and engineering resilience in shaping adaptation policies.

a) Discuss five ways in which ecological resilience and engineering resilience influence climate change adaptation strategies.

(10 Marks)

b) Assess two reasons why resilience thinking is important in climate change vulnerability analysis.

(5 Marks)

QUESTION FIVE

A developing country is struggling to design effective adaptation pathways that can respond to both current climate risks and long-term

transformation needs. Policymakers are considering multiple transition strategies across sectors such as agriculture, water, and urban planning.

a) Examine five characteristics of effective adaptation pathways in addressing climate change vulnerability.

(10 Marks)

b) Evaluate two ways in which transformational adaptation differs from incremental adaptation.

(5 Marks)

QUESTION SIX

Research shows that poverty and inequality significantly increase vulnerability to climate change impacts. Communities with limited access to resources often experience higher exposure to environmental risks and lower adaptive capacity.

a) Analyse five ways in which poverty increases vulnerability to climate change impacts.

(10 Marks)

b) Assess two policy interventions that can reduce climate vulnerability among low-income populations.

(5 Marks)