

**RHODES UNIVERSITY
DEPARTMENT OF ENVIRONMENTAL SCIENCE**

EXAMINATION: NOVEMBER 2012

ENVIRONMENTAL SCIENCE 302

PAPER 1

Internal examiners: Prof. C. Shackleton

MARKS: 100

Dr G. Thondlhana

DURATION: 3 HOURS

Dr K. Whittington-Jones

External examiner: Dr P. O'Farrell

INSTRUCTIONS

1. Answer BOTH sections, noting the choice within sections
 2. Answer each section in a SEPARATE answer book
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SECTION A:

Environmental Management Systems (40 marks)

Question A1: Answer any TWO of the following for 5 marks each

- 1.1. Briefly describe what is meant by the term 'Technology Assessment'. (5)
- 1.2. Briefly describe what is meant by the term 'Functional Unit' (as used in Life Cycle Assessment). (5)
- 1.3. Briefly describe what is meant by the following term 'Environmental due diligence assessment'. (5)

(Total = 10 marks)

Question A2: Answer the following COMPULSORY question for 10 marks

- 2.1. By means of a diagram, describe the sequential steps and relationship between each of the elements of the ISO 14001 Environmental Management System. Provide a brief annotation of each step to explain its primary purpose within the system. (10)

(Total = 10 marks)

Question A3: Answer ONE of the following for 20 marks

EITHER

- 3.1. Provide a brief description of the key steps of a Life Cycle Assessment and then discuss the potential applications of Life Cycle Assessment. (20)

OR

- 3.2. Many believe that the increased awareness of environmental issues by consumers will create significant new business opportunities for some, but for others it will pose a threat to corporate survival. Discuss this statement using appropriate examples. (20)

(Total = 20 marks)

**SECTION B:
Local level action (45 marks)**

Question B4: Answer any TWO of the following for 5 marks each

- 4.1. Identify the challenges of participatory-based approaches as natural resource management systems. (5)
- 4.2. Briefly explain Gruber's (2010) organizational principles of Community-Based Natural Resources Management. (5)
- 4.3. Define Payment for Ecosystem (PES) and identify the key enabling conditions for equitable PES. (5)

(Total = 10 marks)

Question B5: Answer any ONE of the following for 10 marks

EITHER

- 5.1. Can South Africa's IDPs be considered equivalent to Local Agenda 21 (Local Action 21) processes and outcomes? Answer this by comparing the differences and similarities between the two. (10)

OR

- 5.2. Describe the potential inherent biases when using lay-person volunteers to collect environmental data. (10)

(Total = 10 marks)

Question B6: Answer ONE of the following for 25 marks

EITHER

- 6.1. Using detailed case studies, give a critique of CBNRM as a local-level natural resource management approach. (25)

OR

- 6.2. Drawing from case studies, discuss the key issues or debates around Payment for Ecosystem Services. (25)

(Total=25 marks)

**SECTION C:
Emerging Topics in Environmental Science (15 marks)**

Question C7 (Compulsory) for 15 marks:

- 7.1. Select any one of the lectures on emerging or 'hot' topics and explain its relevance to environmental science generally and how knowledge of the issue can aid practical environmental management in South Africa. (15)

END OF EXAMINATION PAPER