

RHODES UNIVERSITY

DEPARTMENT OF ENVIRONMENTAL SCIENCE

EXAMINATION: NOVEMBER 2014

**ENVIRONMENTAL SCIENCE 302
PAPER 2**

Internal examiners: Prof. D. Hughes
Dr. G. Thondhlana

MARKS: 100
DURATION: 3 HOURS

External examiner: Dr. Patrick O' Farrell

INSTRUCTIONS

1. This paper consists of two (2) sections:
2. Answer each section in a separate answer book.
3. There are **five (5)** questions. Answer **ALL** questions.
4. Time management is very important. The value of the mark for each question should be used as a rough guide to the amount of time allocated to answer the question (100 marks in 180 minutes).
5. It is in the candidate's interest to write legibly.
6. At the end of the examination, place all answer books inside the book used to answer **SECTION A**.
7. This paper has **three (3)** pages.
8. The Oxford concise English dictionary may be used during this examination.

PLEASE DO NOT TURN OVER THIS PAGE UNTIL TOLD TO DO SO.

SECTION A

Integrated Environmental Management (40 marks)

Question 1: Answer any TWO of the following for 10 marks each

- a) Interested and Affected Parties (IAPs) are involved in various stages of the EIA process. Briefly explain the rationale behind public participation in an EIA process in the context of South African EIA legislation. (10)
- b) Briefly explain the difference between a Basic Assessment (BA) and a full Environmental Impact Assessment (EIA). (10)
- c) Identify and discuss any **five** Environmental Assessment Practitioner (EAP) code of ethics that should be observed in an EIA process. (10)

[Total=20 marks]

Question 2: Answer any ONE of the following for 20 marks

EITHER

- a) Discuss the objectives, merits and shortcomings of EIA processes in South Africa. In your view, how can the effectiveness of EIA process be improved? (20)

OR

- b) With the aid of examples, describe what a Strategic Environmental Assessment (SEA) is and how it relates to the Environmental Impact Assessment referred to in the National Environmental Management Act (NEMA) of 1998 and its 2006 and 2010 amendments. (20)

[Total=20 marks]

SECTION B

Integrated Water Resources Management (60 marks)

Question 3: Answer any TWO of the following for 5 marks each

- a) Briefly discuss the three principles of the South African National Water Act (1997) in the context of previous water legislation in South Africa. (5)
- b) Briefly list the advantages and disadvantages of long-term (chronic) toxicity tests over short-term (acute) toxicity tests. (5)
- c) Briefly explain the five 'Frameworks' that make up Integrated Water Resources Management (IWRM). (5)

[Total =10 marks]

Question 4: Compulsory for 25 marks

Discuss the reasons for successes and failures of IWRM in a South African context. (25)

[Total=25 marks]

Question 5: Answer ONE of the following for 25 marks

EITHER

- a) Describe the Flow-Stressor Response methodology used in South Africa to determine Environmental Water Requirements. Discuss three hypothetical examples of different anthropogenic impacts in space and/or time and what stream processes might be disrupted by these impacts. (25)

OR

- b) Briefly discuss the limitations of independent chemical, toxicological and biomonitoring datasets and explain how the use of a combination of all three approaches maximises the value of each data set. (25)

[Total=25 marks]

END OF EXAMINATION PAPER