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**UNIVERSITY OF SWAZILAND**  
**FACULTY OF HEALTH SCIENCES**  
**DEPARTMENT OF ENVIRONMENTAL HEALTH SCIENCE**

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**FINAL EXAMINATION**

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TITLE OF PAPER	ENVIRONMENTAL IMPACT ASSESSMENT AND AUDITING
COURSE CODE	EHS445
DURATION	TWO (2) HOURS
DATE	NOVEMBER/DECEMBER 2019
TOTAL NUMBER OF MARKS	100
INSTRUCTIONS	<ol style="list-style-type: none"><li>1. DO NOT OPEN THIS PAPER UNTIL YOU ARE INSTRUCTED TO DO SO.</li><li>2. ANSWER ANY FOUR QUESTIONS.</li><li>3. BEGIN YOUR ANSWERS TO EACH QUESTION ON A FRESH PAGE. ENSURE THAT ALL ANSWER SHEETS ARE NUMBERED CORRECTLY.</li><li>4. POOR HANDWRITING AND CARELESSNESS IN ENGLISH LANGUAGE GRAMMAR SHALL RESULT IN LOSS OF MARKS.</li><li>5. ANY FORM OF MISCONDUCT DURING THE EXAMINATION IS PUNISHABLE IN LINE WITH RELEVANT ACADEMIC REGULATIONS.</li></ol>

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**QUESTION ONE [25 MARKS]**

1. One of the international responses to meet the goal of sustainable development was;
  - (a) The Maputo Summit in 1995
  - (b) The United Nations Conference on Sustainable Development (UNCSD) held in Durban in 2000
  - (c) The United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro in 1992
  - (d) All of the above
2. The choice of discount rate is a disadvantage of;
  - (a) Cost-benefit analysis
  - (b) Mathematical models
  - (c) Multi-criteria decision analysis (MCDA)
  - (d) Planning balance sheet (PBS)
3. In EIA, LULU refers to;
  - (a) Largely undetected land-impacting uses
  - (b) Locally unacceptable land-uses
  - (c) Long-range undesirable land-use changes
  - (d) Lasting and unacceptable land-uses
4. An example of point infrastructure/projects is;
  - (a) Electricity transmission lines
  - (b) Sewerage pipes
  - (c) Potable water supply pipes
  - (d) Power stations
5. An example of band infrastructure is;
  - (a) Power stations
  - (b) Bridges
  - (c) Roads
  - (d) Harbours
6. They can be simple or complex, formal or informal, quantitative or qualitative, and aggregated or disaggregated. This refers to;
  - (a) Evaluation methods
  - (b) Impact prediction methods
  - (c) Mitigation methods
  - (d) Methods for enhancement of potential benefits
7. Major projects can be defined according to;
  - (a) Size of rural population affected
  - (b) Financial investment and type of activity
  - (c) The extent of environmental population and area covered by the project
  - (d) Distance of the project from environmentally-sensitive areas
8. One of the following characteristics is a distinguishing factor for large projects;
  - (a) Site of the project
  - (b) Characteristics of pollutants produced
  - (c) Environmental components affected (e.g., land, water, air, flora, etc.)
  - (d) Number of people employed

9. Planning, conflict resolution, construction, operation, close down, etc., are examples of;
  - (a) Environmental impact statement
  - (b) Scoping of project life-cycle
  - (c) Project life-cycle
  - (d) Non-technical summary
10. Previously polluted and derelict land is brought back into productive use.
  - (a) Physical impact
  - (b) Socio-economic impact
  - (c) Distributional impact
  - (d) Strategic impact
11. Pressure on local health services and on the local housing market, and increases in community conflict and crime
  - (a) Actual and perceived impact
  - (b) Socio-economic impact
  - (c) Qualitative impact
  - (d) Direct impact
12. An approach to the analysis of risks associated with various types of development is known as;
  - (a) Socio-impact assessment
  - (b) Environmental impact statement
  - (c) Strategic environmental assessment
  - (d) Risk assessment
13. Some problems associated with the cost-benefit analysis approach to evaluation can be eased by the application of;
  - (a) Multi-criteria decision analysis (MCDA)
  - (b) Goals achievement matrix (GAM)
  - (c) Planning balance sheet (PBS)
  - (d) Multi-attribute utility theory (MAUT)
14. Agenda 21 was a result of;
  - (a) The UNCED in Rio de Janeiro in 1992
  - (b) The Maputo Summit in 1995
  - (c) The UNCSD in Durban in 2000
  - (d) United Nations Environment Programme
15. In classification of mitigation measures, abatement on site is an example of;
  - (a) Project phase
  - (b) Mitigation hierarchy
  - (c) Levels of mitigation
  - (d) Understanding environmental baseline
16. In classification of mitigation measures, project management measures are an example of;
  - (a) Mitigation hierarchy
  - (b) Project phase
  - (c) Understanding environmental baseline
  - (d) Levels of mitigation

17. LULU has largely been applied in;
- (a) UK
  - (b) Africa
  - (c) USA
  - (d) Australia
18. In classification of mitigation measures, restoration, afteruse/aftercare are examples of;
- (a) Project phase
  - (b) Mitigation hierarchy
  - (c) Levels of mitigation
  - (d) Understanding environmental baseline
19. The basic evaluation principle is to measure in monetary terms where possible. This is a principle of;
- (a) Planning balance sheet (PBS)
  - (b) Cost-benefit analysis (CBA)
  - (c) Community impact evaluation (CIE)
  - (d) Multi-attribute utility theory (MAUT)
20. Impact and effect are widely used in the literature and legislation on EIA, however it is not always clear whether they are interchangeable or should be used for specifically different meanings. In your text book, different authors have attempted to distinguish these terms. Demonstrate your understanding of the differing views in the following questions.
- 20.1 Effects and impacts are synonymous in;
- (a) Catlow and Thirlwall (1976)
  - (b) Australia (CEPA 1994)
  - (c) Preston and Bedford (1988)
  - (d) The United States (National Environmental Policy Act)
- 20.2 Effects are physical and natural changes resulting directly or indirectly from development, while impacts are consequences or end products of those effects represented by attributes of the environment on which we can place an objective or subjective value. This is the belief of;
- (a) The United States (National Environmental Policy Act)
  - (b) CEPA (1994) (Australia)
  - (c) Catlow and Thirlwall (1976)
  - (d) Preston and Bedford (1988)
- 20.3 There does seem to be greater logic in thinking of an impact resulting in an effect. This is the view of;
- (a) CEPA (1994) (Australia)
  - (b) Stakhiv (1988)
  - (c) Preston and Bedford (1988)
  - (d) Catlow and Thirlwall (1976)
- 20.4 The use of the term impact connotes a value judgement. This is according to;
- (a) The United States (National Environmental Policy Act)
  - (b) Preston and Bedford (1988)
  - (c) Catlow and Thirlwall (1976)
  - (d) CEPA (1994) (Australia)

20.5 Effects are scientific assessment of facts, while impacts refers to the evaluation of the relative importance of these effects by analysts and public. This is the view of;

- (a) CEPA (1994) (Australia)
- (b) Preston and Bedford (1988)
- (c) Catlow and Thirlwall (1976)
- (d) Stakhiv (1988)

20.6 Your text book has adopted the definitions of impacts and effects in line with;

- (a) Catlow and Thirlwall (1976)
- (b) Australia (CEPA 1994)
- (c) The United States (National Environmental Policy Act)
- (d) Preston and Bedford (1988)

**QUESTION TWO [25 MARKS]**

1. The establishment of a new amusement park in a pristine environment is being rejected because local communities argue that they do not want to experience any form of impacts to their beautiful environment, and that they would like to keep this environment in this condition for many years to come. You are an EIA specialist hired by the project proponent and you are going to use Figure 1 to address the community regarding the pristine environment that they want to preserve. Describe some of your talking points [7].

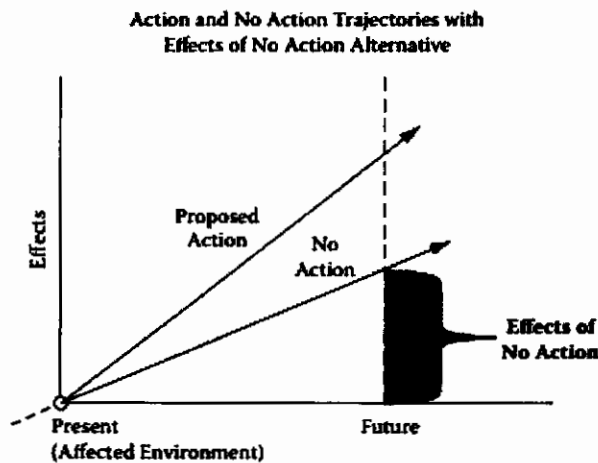


Figure 1: No action alternative

- 2. The economic goal of increasing gross national product (GNP), using more inputs to produce more goods and services (as shown in Figure 2) contains the seeds of its own destruction. Why? [7]
- 3. State one scientific law that is in agreement with your responses to question two above [3].

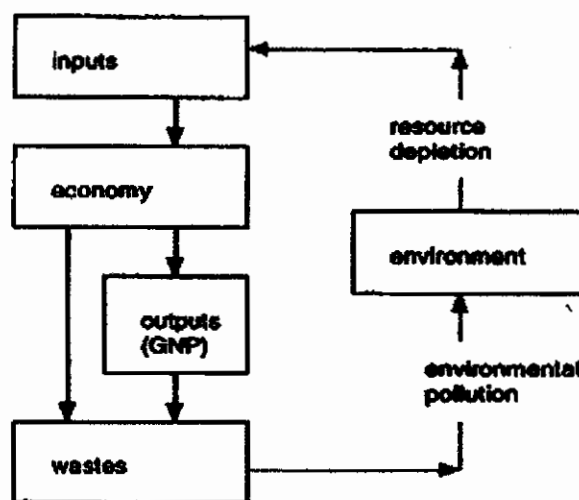


Figure 2: The economic development process in its environmental context

4. In order to manage the interaction of economic and social development with the natural environment, the concept of sustainable development emerged in the 1980s. Define sustainable development according to the United Nations World Commission on Environment and Development [2].
5. State any three institutional responses that have occurred to meet the goals of sustainable development [6].

### QUESTION THREE [25 MARKS]

1. Following the recently concluded parliamentary elections in Swaziland, Members of Parliament (MPs) are doing everything they can to develop their communities; most of them are submitting project proposals weekly. A few MPs feel the Swaziland Environment Authority (SEA), which you are part of, is unfair because some projects are immediately given a green light and are implemented straightaway, while a full EIA is demanded from others. You have been mandated to go to parliament to address all MPs to convince them that there is no favouritism. Describe some of the points that you will present [12].
2. According to Ross (2000), communication of highly technical information to minorities and low-income groups can be a challenging task. Describe the example cited by this author to illustrate this point [8].
3. Williams and Hill (1996) identified a number of disparities between traditional ways of communicating environmental information and the needs of minority and low-income groups. Describe any two such disparities [5].

### QUESTION FOUR [25 MARKS]

1. In EIA, the simple term "public" actually refers to a complex amalgam of interest groups, which changes over time and from project to project. To what extent do you understand this term? [10]
2. The main predicted impacts associated with Proposed Project A (PPA) are levels of methane in the atmosphere and sediment transportation by runoff (leading to increased turbidity in nearby streams). On the other hand, Proposed Project B (PPB) is associated with an increase in crime rate, a negative attitude towards local planning authorities. As an EIA expert, why do you think the evaluation of impacts in PPA is much easier than in PPB? [7]
3. In impact prediction, an impact can either be of low significance, or medium significance or high significance. Using these categories of impact prediction, label A – D in **Figure 3** below [8].

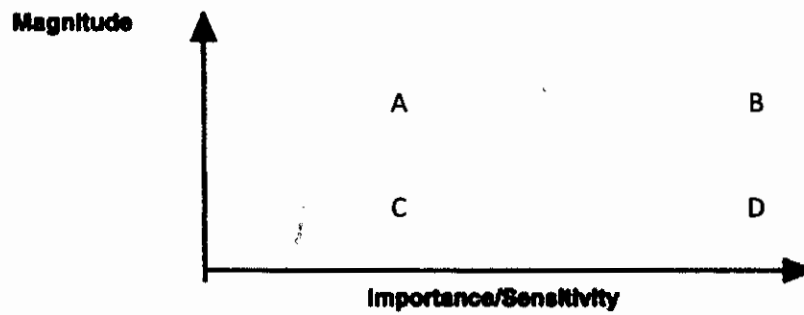


Figure 3: Significance expressed as a function of impact magnitude and the importance/sensitivity of the resources or receptors.

**QUESTION FIVE [25 MARKS]**

1. An EIS should ideally be one unified document, with perhaps a second volume for appendices, however several EIS documents are often submitted. Describe some of the factors contributing to this problem [5].
2. According to the UK Department of the Environment, the definition of environment includes "all media susceptible to pollution". State any five examples of such media [5].
3. The environment has important economic and sociocultural dimensions. State any five examples of such dimensions [5].
4. State any five examples of some of the types of impact that may be encountered in EIA [5].
5. In EIA, what are the differences between effects and impacts? [5]