UNIVERSITY OF SWAZILAND

FACULTY OF HEALTH SCIENCES

DEPARTMENT OF ENVIRONMENTAL HEALTH SCIENCE

TYPE OF ASSESSMENT	RESIT EXAMINATION
TITLE OF PAPER	ENVIRONMENTAL IMPACT ASSESSMENT AND AUDITING
COURSE CODE	EHS448
DURATION	2 HOURS
DATE	NOVEMBER – Dec 2021
TOTAL NUMBER OF MARKS	100
INSTRUCTIONS	1. DO NOT OPEN THIS PAPER UNTIL YOU ARE INSTRUCTED TO DO SO. 2. ANSWER ALL QUESTIONS. 3. BEGIN YOUR ANSWERS TO EACH QUESTION ON A FRESH PAGE. ENSURE THAT ALL ANSWER SHEETS ARE NUMBERED CORRECTLY. 4. POOR HANDWRITING AND CARELESSNESS IN ENGLISH LANGUAGE GRAMMAR SHALL RESULT IN LOSS OF MARKS. 5. IN THE UNFORTUNATE CASES OF MISCONDUCT, DURING THE EXAMINATION, RELEVANT ACADEMIC REGULATIONS SHALL BE APPLIED.

Question 1 [25 Marks]: ***Multiple choice questions***

1. Major projects can be defined according to;
   (a) Financial investment and type of activity
   (b) Size of rural population affected
   (c) The extent of environmental population and area covered by the project
   (d) Distance of the project from environmentally-sensitive areas
2. One of the following characteristics is a distinguishing factor for large projects;
   (a) Site of the project
   (b) Number of people employed
   (c) Characteristics of pollutants produced
   (d) Environmental components affected (e.g., land, water, air, flora, etc.)
3. 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
4. Previously polluted and derelict land is brought back into productive use.
   (a) Socio-economic impact
   (b) Distributional impact
   (c) Strategic impact
   (d) Physical impact
5. 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
6. The construction and operational stages of a project are associated with;
   (a) Short-run and long-run impacts
   (b) Socio-economic impacts
   (c) Distributional impacts
   (d) Strategic impacts
7. Construction-stage impacts, such as change in land use, are;
   (a) Reversible impacts
   (b) Irreversible impacts
   (c) Socio-economic impacts
   (d) Strategic impacts
8. Impacts on areas beyond the immediate locality are;
   (a) Strategic impacts
   (b) Indirect impacts
   (c) Direct impacts
   (d) Adverse impacts
9. These are often regional, but may sometimes be of national or even international significance.
   (a) Qualitative impacts
   (b) Direct impacts
   (c) Strategic impacts
   (d) Distributional impacts

10. Environmental resources cannot always be replaced; once destroyed, some may be lost for ever
    (a) Strategic impacts
    (b) Direct impacts
    (c) Quantitative
    (d) Irreversible
11. Although a particular project may be assessed as bringing a general benefit, some groups and/or geographical areas may be receiving most of any adverse effects, the main benefits going to others elsewhere.
    (a) Irreversible impacts
    (b) Direct impacts
    (c) Distributional impacts
    (d) Socio-economic impacts
12. The size of the team preparing an EIA report may vary from;
    (a) 10-17 people
    (b) 5-10 people
    (c) 1-6 people
    (d) 2-12 people
13. Most of the possible alternatives that arise during consideration of alternatives;
    (a) Are often rejected by the developer
    (b) Are always accepted by the developer
    (c) Are monitored by the public
    (d) Are monitored by local planning authorities
14. Gravel extraction can take place only in areas with sufficient gravel deposits, and wind-farms require locations with sufficient wind speed. This is related to;
    (a) Business unusual option
    (b) No action option
    (c) Alternative locations
    (d) Different project/site layouts and designs
15. For the loss of privacy, quietness and safety in houses next to a new road, the provision of sound insulation and/or the purchase by the developer of badly affected properties. This is an example of;
    (a) Compensation for adverse effects
    (b) Compensation for distributional effects
    (c) Compensation for longitudinal effects
    (d) A method to avoid impacts
16. A river or stream diverted by a road project can be unconverted and re-established with similar flow patterns as far as is possible. This is an example of;
    (a) Compensation for adverse effects
    (b) Methods to reduce adverse effects
    (c) Repair, rehabilitate and/or restore methods
    (d) Methods to avoid impacts
17. The use of construction-site hostels, and coaches for journeys to work are examples of;
    (a) Repair, rehabilitate and/or restore methods
    (b) Methods to reduce adverse effects
    (c) Compensation for adverse effects
    (d) Methods to avoid adverse effects

18. The use of a designated lorry route, and day-time working only, the establishment of buffer zones, etc., are examples of;
    (a) Methods to reduce adverse effects
    (b) Repair, rehabilitate and/or restore methods
    (c) Compensation for adverse effects
    (d) Methods to avoid adverse effects
19. Predicting impacts to terrestrial ecology (animal and plant species) can be achieved by adopting;
    (a) Mixed-modelled impacts
    (b) Hard-modelled impacts
    (c) Soft-modelled impacts
    (d) Gaussian dispersion model
20. Predicting air and noise impacts that are associated with a proposed development can be achieved by adopting;
    (a) Soft-modelled impacts
    (b) Mixed-modelled impacts
    (c) Gaussian dispersion model
    (d) Hard-modelled impacts
21. The simplest impact identification methods involve the use of;
    (a) Networks
    (b) Lists of impacts
    (c) Causal chain analysis
    (d) GIS maps
22. The most complex impact identification methods include the use of;
    (a) Interactive computer programmes
    (b) Lists of impacts
    (c) GIS maps
    (d) Delphi panels
23. A disadvantage of one of the impact identification methods is that it does not usually include direct cause-effect links to project activities. This method is;
    (a) Delphi panels
    (b) GIS mapping
    (c) Checklists
    (d) Qualitative methods
24. An advantage of one of the impact identification methods is that it is easy to use. This method is;
    (a) Delphi panels
    (b) GIS mapping
    (c) Qualitative methods
    (d) Checklists
25. One impact identification method operates by providing a scale for classifying estimated impacts, from highly adverse to highly beneficial. This method is;
    (a) GIS mapping
    (b) Questionnaire checklist
    (c) Weighted matrices
    (d) Distributional questionnaires

Question 2 [25 Marks]: ***True or false questions***

Study the statements given below and for each, chose the correct answer between true (T) and false (F).

1. The simplest impact identification methods involve the use of lists of impacts to ensure that none has been forgotten.
2. Checklist usually include direct cause-effect links to project activities.
3. The most complex impact identification methods includes the use of interactive computer programmes, networks, or the use of weightings to denote impact significance.
4. Impact identification methods must be easy and economical to use.
5. One of the aims of impact identification methods is to determine the extent of employment benefits to local residents in project areas.
6. Simple matrices are very good in identifying aspects like duration, magnitude, severity, etc. of impacts.
7. Questionnaire checklists may also provide a scale for classifying estimated impacts, from highly adverse to highly beneficial.
8. The use of magnitude matrices is enhanced by the adoption of the traffic light system colours (e.g., red, green and amber).
9. The impacts of a project that affects various sectors of the community (e.g., between the old and the young), in different ways, are best analysed by the use of distributional impact matrices.
10. The fact that various components of a development project have different impacts is demonstrated well by weighted matrices.
11. The use of importance weighting, magnitude of the impact and the weighted impact is a key feature of causal chain analysis.
12. A considerable amount of environmental knowledge is required in the use of quality of life assessments.
13. Overlay maps are easy to use, easy to understand and are popular.
14. Hard-modelled impacts are areas of impact prediction where mathematical models play a central role
15. In terms of choice of prediction methods, traffic, and socio-economic impacts fall under the category of mixed-modelled impacts.
16. In terms of choice of prediction methods, air, noise and water impacts fall under the category of hard-modelled impacts.
17. For normative approaches, predictions are made that are consistent with the past and present data.
18. The use of scientific laws, statistical analysis and computer programmes is related to cost benefit analysis.
19. Extrapolative methods work backwards from desired outcomes to assess whether a project is adequate to achieve those outcomes.
20. Extrapolative and normative methods are tools for mitigation of impacts.
21. The incompatibility of monetary and non-monetary units makes decision making problematic. This is one of the problems associated with cost benefit analysis.
22. Cost benefit analysis, planning balance sheet, community impact evaluation are tools for impact prediction.
23. Comparing impacts of a proposed development with a similar existing development is practiced in expert judgment and analogue models.
24. Deterministic and stochastic models are two broad categories of physical/architectural models and experimental methods.
25. Given a choice between socio-economic impacts and water pollution impacts, it is easier to evaluate water pollution impacts than socio-economic impacts.

Question 3 [25 Marks]: ***Examples***

1. State any three examples of impacts that may be encountered in EIA [3].
2. In monitoring and auditing, there are several examples of situations where EIA has failed to predict significant impacts. The usually cited examples are taken Berkes (1988), Dickman (1991), Bisset (1984), Mills (1992), and Ecotech Research and Consulting Ltd (1994). In the examples given below, state the relevant author/authors [10].
   (a) A monitoring study of the visual impacts of five recent UK major project developments (a trunk road, two wind farms, a power station and an opencast coal mine) revealed that there were often significant differences between what was stated in an EIS and what actually happened.
   (b) He/she indicated how an EIA on the James Bay mega-HEP (1971–85) failed to pick up a sequence of interlinked impacts, which resulted in a significant increase in the mercury contamination of fish and in the mercury poisoning of native people.
   (c) Auditing revealed some underestimation of the impacts of employment and emissions, some overestimation of housing impacts and a reasonable identification of the impacts of construction traffic.
   (d) He/she identified the failings of an EIA to pick up the impacts of increased lead and zinc mine tailings on the fish population in Garrow Lake, Canada's most northerly hyper saline lake.
   (e) A study of four major developments—the Sullom Voe (Shetlands) and Flotta (Orkneys) oil terminals, the Cow Green reservoir and the Redcar steelworks—suggested that 88% of the predictions were not auditable.
3. State any three examples of alternatives [3].
4. State any three examples of issues that require global political commitment, in order to meet the goals of sustainable development [3].
5. State any three examples of projects that are known to attract high costs during the EIA process [3].
6. State any three examples of matrices [3].

Question 4 [25 marks]: ***Advantages and disadvantages***

1. Outline any three benefits of monitoring in EIA [6].
2. Outline any three disadvantages of networks [6].
3. Outline any three benefits of public participation in EIA [6].
4. Outline any three advantages of effective scoping [6].
5. Outline one characteristic of sustainable development [1].