

## Environmental Science

Time: 180 minutes

Total Marks: 90

Note: No clarifications will be given during the exam  
If need, make Suitable assumptions and state it clearly when answering

### Part I. Environmental : Ethics, Laws and Impact Assessment (20 Marks)

- ✓ 1. Differentiate (3 differences) different types of Environmental ethics concepts 6
2. Give a brief account of Wild life Act and Air Act 4
3. *An Investor wants to put up an Industrial Plant for the manufacture of paper and its derivatives for both local and external market. The Investor intends to establish the paper manufacturing mill in a relatively wet and forested upper parts of Laikipia District in the slopes of Mt. Kenya. A part from the paper mill, the Investor will also provide infrastructure and social amenities in the region. In view of the socio-economic and bio-physical environmental implications that may result due to the proposal, there has been public debate particularly on the loss of habitat/biodiversity and competition for scarce water resources in the region. Assuming your consultancy firm has won a contract to undertake Environmental Impact Assessment (EIA) study on this proposed project:* 10

Discuss the logical steps in the EIA process that your study team is likely to follow in order to achieve the task assigned to you. Justify the formation of the Interdisciplinary Team for this EIA study

OR

*An important mining company has been operating for about 4 yrs in a coastal region. The mining activity of this company is very intense. This company has effectively implemented its EMP with great success, mitigating the environmental impacts caused by this activity. Up to date the results of the environmental auditory show up that this company completely fulfil all the legal requirements, laws and environmental standards established by the authorities. Since 1 yr this company is part of a trial against the community, which argues that after the company has started its mining activity in the zone, the quality of the water has been significantly deteriorated and that this company is operating in a protected area. The Company argues that it has relevant proofs in order to demonstrate that they have not polluted the environment but the others industries located in the zone. The mining company emphasizes that when they began the activities the environment was already polluted specially the water and that the quality standards of the water were not good at all.*

- a. What document the mining company must present in the trial in order to demonstrate its argument that the environmental quality was already deteriorate before their activities began in the zone. Why is this document so important? Explain?
- b. What document the mining company should have obtained in order to get its environmental license demonstrating that they are not located in a protected area. What is the name of the institution that issues this document?
- c. Mention 2 environmental impacts this company might cause into the environment and 2 ways to mitigate this impacts that should be included in its EMP.

Understand  
Screen



**Part II. Green Computing (12 Marks)**

1. What is green computing? 2
2. What are the approaches of green computing? 8
3. Match the following 2
 

i. Printed circuit boards	—	a. Cadmium
ii. Computer batteries	—	b. Poly Chlorinated Bi-phenyls
iii. Capacitors and transformers	—	c. Mercury
iv. Switches & flat screen monitors	—	d. Lead & cadmium

**Part III. Green Engineering (8 Marks)**

1. What is Green engineering? 2
2. Explain following principles of green engineering with examples 6
  - (i) Conserve complexity (ii) Minimize material diversity
  - iii) Integrate material and energy flows?

**Part IV. Green Accounting and Ecosystem goods and services (34 Marks)**

1. Expand: WTP, EDP, ISEW, MEW 4
  2. Give two examples for non-marketed environmental (a) Goods (b) Services 2
  3. What kind of ecosystem services are provided by mangrove habitats? 4 → provisional  
→ cultural
  4. Relate Hicksian income with Green accounting. 4
  5. Explain surrogate market approach methods with examples 4
  6. "No Transaction: No Existence; No Money: No Existence; No Value Judgments" — support each statement with an example in view of traditional economics. 6
  7. What is SNA? Define its framework? Why the concept of SNA remained so popular for longer time? (2+2+6) OR 10
- What is SEEA? How it is different from SNA? How natural assets are classified in SNA and SEEA? (2+2+6)

**Part V. Wetlands (14 Marks)**

1. What is Ramsar Convention 1
2. List six wetlands of six different states? 3
3. Describe any one Ramsar site (other than your's) with focus on Ramsar wetland
  - a. Location and Any three criterion of convention to describe it as 3
  - b. Ecological significance and Threats / Reasons for change 4
  - c. Restoration or conservation measurements 3

**Part VI. General (2 Marks)** 1. Give a critical comment on following figure 2

→ construction of hotel  
→ pollution by pesticides  
→ destruction of phumdis



→ People didn't care about it  
→ Hard to change