

MAASAI MARA UNIVERSITY

**REGULAR UNIVERSITY EXAMINATIONS**

**2016/2017 ACADEMIC YEAR**

**FOURTH YEAR SECOND SEMESTER**

**SCHOOL OF BUSINESS & ECONOMICS**

**BACHELOR OF SCIENCE IN AGRICULTURAL ECONOMICS & RESOURCE ECONOMICS**

**COURSE CODE: ARE 442**

**COURSE TITLE:** **ENVIRONMENTAL ECONOMICS**

**DATE: 15TH MAY, 2017 TIME: 0830-1030HRS**

**INSTRUCTIONS TO CANDIDATES**

Answer Question **ONE** and any other **THREE** questions

*This paper consists of* ***3*** *printed pages. Please turn over.*

**QUESTION ONE**

1. ‘While allocative efficiency is a necessary condition for optimality, it is not generally true that moving from an allocation that is not efficient to one that is efficient must represent a welfare improvement.’ Discuss. **(5mks)**
2. To help fight the problem of nonpoint source pollution associated with agricultural run-off; your county is contemplating charging an annual fee of KShs 500 to every seller of pesticides. If this fee is to achieve an efficient solution, state specifically according to externality theory.
3. What the KShs 500 fee must represent? **(1mk)**
4. Which market is represented? **(1mk)**
5. Illustrate by labeling where and how the fee is imposed.

**(3mks)**

1. Assume for simplicity that there are two identical point sources discharging chemical wastes into a local water body. Currently, each source releases 30 units of effluent, for a total of 60 units. To improve water quality, suppose that the government sets an aggregate abatement standard of 30units. The two polluters’ abatement cost functions are: Point source 1: TAC1 = 20 + A11; Point Source 2: TAC2 = 40 + 2A22.
2. Suppose the government allocates the abatement responsibility equally across the two point sources so that each source must abate 15 units of effluent. Graphically illustrate this policy. **(4mks)**
3. Why does this abatement allocation not yield cost-effective solution? Support your answer numerically. **(3mks)**
4. What cost condition is required for the government’s abatement allocation to be cost effective? **(2 mks)**
5. Economic activity cannot, in material sense, create anything. It involves transferring material extracted from the environment so that it is more valuable to humans. Discuss the material balance principle, and its implications. **(6mks)**

**QUESTION TWO**

1. Explain the role of transport development in environmental degradation. **(4mks)**
2. Derive the conditions that are necessary for the realization of an efficient allocation. **(7mks)**
3. Agricultural development is a necessity in meeting the food security for the growing population. Discuss the effect of agricultural development to environmental degradation. **(4mks)**

**QUESTION THREE**

1. Economically analyze the use of uniform technology-based effluent limitations. **(5mks)**
2. Discuss the potential solutions to natural resource problems. **(6mks)**
3. ‘Poor people are agents of environmental degradation’. Discuss.

**(4mks)**

**QUESTION FOUR**

1. Discuss the causes of environmental problems. **(5mks)**
2. Discuss the international water issues. **(5mks)**
3. Explain the sources of ground water pollution. **(5mks)**

**QUESTION FIVE**

1. The marginal private cost, benefit, external cost and external benefit functions for a petroleum refinery are as follows; MPC =10+0.075Q; MPB = 42-0.125Q; MEC=0.05Q and MEB=0.

Required:

1. Interpret the MEC. **(2mks)**
2. Competitive equilibrium. **(2mks)**
3. Efficient equilibrium. **(2mks)**
4. Compare and explain the two equilibria in (ii) and (iii) above. **(4mks)**
5. By an illustration, asses the net gain to society of restoring efficiency in the refined petroleum market. **(5mks)**

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