MAASAI MARA UNIVERSITY

REGULAR UNIVERSITY EXAMINATIONS
2018/2019 ACADEMIC YEAR
FOURTH YEAR FIRST SEMESTER

SCHOOL OF BUSINESS & ECONOMICS
BACHELOR OF SCIENCE IN AGRICULTURAL ECONOMICS

COURSE CODE: ARE 462
COURSE TITLE: NATURAL RESOURCE ECONOMICS

DATE: 7TH DECEMBER, 2018 **TIME: 11.00AM -13.00 P.M**

INSTRUCTIONS TO CANDIDATES

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

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

QUESTION ONE

(a) What is a steady-state economy? **(2mks)**

(b) Explain the ways recycling could substitue for environmental services. **(4mks)**

(c) Given the following information; discount rate (r)10%, total resource stock (Q_{tot}) as 100, demand and supply function as p=200-q and p=10 respectively. Required:

(i) Period 0 (live for today) competitive market equilibrium. **(3mks)**

(ii) Present value of total gains from trade over period 0. **(3mks)**

(iii) Gains in Period 1(future). **(1mk)**

(iv) Suppose Q_{tot} is distributed equally over period 0 and 1. What is the present value gain from trade in period 0. **(2mks)**

(v) What is the present value gain from trade in period 1. **(2mks)**

(d) Explain the special issues in fisherie resource that affects fisheries economics. **(4mks)**

(e) By an illustration, explain the concept of maximum sustainable yield. **(4mks)**

QUESTION TWO

(a) What is Hotelling's rule of dynamic efficiency. **(1mk)**

(b) Given a revenue function and total cost function as $TR=aq_i-b/2\ q_i^2$ and $TC=Cq_i$ where q is quantity of output, C is cost and i=1,….,n. The resource is exhaustible such that $Q_{tot}=\sum q_i$. Current period 0 and future period 1 quantity totals are $q_0+q_1=100$, a=200, b=1, c=10, and r=10%. Use q_0 and q_1 to test the Hotellings rule. **(6mks)**

(c) Explain the influence of changes in discount rate on the efficient intertemporal extraction of exhaustible resource. **(4mks)**

(d) Discuss the rate of return equality to investment across periods. **(4mks)**

QUESTION THREE

(a) Discuss the debate on the extent of the substitution possibilities between human capital and natural capital. **(6mks)**

(b) Discuss any THREE ways of restoring efficiency in an open access fishery. **(9mks)**

QUESTION FOUR

(a) Explain the ecological and economic limitations of maximum sustainable yield. **(4mks)**

(b) Using suitable natural resource example, explain the pervasiveness and complexity of the interdependence between economic activity and the environment. **(6mks)**

(c) State the assumptions of the theory of dynamic efficient non-renewable resource pricing. **(5mks)**

QUESTION FIVE

(a) By illustration of the interdependence of the economy and environment, discuss the material balance principle model. **(9mks)**

(b) Explain the underlying concepts of sustainable resource services. **(6mks)**

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