Uva Wellassa University
BSc in Export Agriculture

End Semester Examination June/July 2010
Year III Semester II

Theories of Agricultural Resource Management (EAG 323-3)

Instructions

Answer **all** questions. All questions bear equal marks.
No. of questions : Five (05)
No. of pages : Two (02)
Total marks allocated : 100%
Time : Three Hours (03 hrs)

1.

a. With the use of suitable illustrations describe the following in relation to fishery:
   i. Sustainable yield.
   ii. Maximum sustainable yield.
   iii. Maximum economic yield.
   iv. Open access equilibrium level.

b. The effort catch relationship (production function) of a fishery is given by,
   $Y = 90E - 2E^2$
   Where Y is the sustainable yield measured in kilograms of fish and E is fishing effort measured in number of fishing trips. Each fishing trip costs Rs.900.00. Fish sell at Rs.40.00 per kilogram.

   Determine the following
   i. Maximum Sustainable Yield, corresponding level of fishing effort and private profit.
   ii. Maximum Economic Yield, corresponding level of fishing effort.
   iii. Find the open access equilibrium level of effort.

2.

a. What are the requirements for achieving Pareto Efficiency in resource allocation?
b. Using an Edgeworth-Bowley box diagram, show efficiency of production could be achieved.
c. Show the relationship between the Contract Curve (Production Efficiency Locus) and the production possibility frontier.

3.

a. "Efficient extraction of an exhaustible resource must account for market dynamic". WHY?

b. Explain the concept that is generally used to determine efficient intertemporal extraction of an exhaustible resource.

c.

i. Determine the equilibrium conditions for efficient intertemporal extraction of oil under the following conditions;

- **Two periods (T_0 and T_1)**
- **Constant resource demand given by the equation $P = 50 - 0.5Qd$**

Where P is the price of oil in $ per barrel (bbl) and Qd is the quantity demanded in bbl

- **Restricted oil supply ($Q_0 + Q_1 = 100$)**

$Q_0 = Quantity\ of\ oil\ extracted\ in\ time\ period\ T_0$

and

$Q_1 = quantity\ of\ oil\ extracted\ in\ time\ period\ T_1$

- **Zero Marginal Extraction Cost $MEC = 0$**

ii. Determine Q_0 and Q_1 (efficient extraction rates of oil in the two time periods).

iii. Determine Net Social Benefit from the optimum allocation.

4. Write explanatory notes on the followings;

a. Management of water resources.

b. Allocation of public goods.

c. The concept of sustainable forest management.

5.

a. Define the term "Externality".

b. What do you mean by command control methods in managing externalities?

c. "Some command and control decisions may violate the cost effectiveness criterion". Discuss.

d. "A pollution permit trading system gives right to a market for pollution rights". Comment on this using an example.