NTNU
Norwegian University of
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Department of Economics

Examination paper for SØK1101

Environmental and Resource Economics

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Permitted examination support material: C /Flg formelsamling: Knut Sydsæter, Arne Strøm og Peter Berck (2006): Matematisk formelsamling for økonomer, 4utg. Gyldendal akademiske. Knut Sydsæter, Arne Strøm, og Peter Berck (2005): Economists' mathematical manual, Berlin.
Calculator: Casio fx-82ES PLUS, Casio fx-82EX Citizen SR-270x, SR-270X College or HP 30S.

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Informasjon om trykking av eksamensoppgave

Originalen er:

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Question 1

Consider a fish stock where the natural growth is governed by the logistic natural growth function $F(X) = sX(1 - X / L)$.

a) Explain this function and illustrate it graphically. What will be the size of the fish stock in absence of fishing?

b) Fishing is now taking place. Explain how natural growth and fishing may influence the size of the fish stock. What is meant with X_{msy}?

c) Assume now that the fishing is governed by the catch function $h = qEX$. Explain this function. Find the fishing effort and stock level that maximizes the economic yield. Illustrate the solution.

d) What is your understanding of an open-access fishery? Find this solution and compare with what you found in c).

e) Discuss ways to regulate fisheries.

Question 2

a) Discuss briefly arguments for and against subsidizing electric vehicles (EVs).

b) Explain the main difference between a stock pollution problem and a flow pollution problem.

c) What is your understanding of a quota market for emission permits?

d) Discuss briefly the conceptual difference between renewable and non-renewable natural resources.

e) A stand of trees is growing (in m^3) according to the equation $V(t) = 0.1t^3 - 0.004t^2$. Draw the growth function. Find the year when the stand reaches its maximum value. Find also the time when the stand reaches its maximum average value. How may this value differ from the optimal economic logging time?