Guidelines for marking – ECON4620 spring 2010.

General remarks.
The course has emphasised understanding and insights rather than derivation of formal results. Answers are therefore expected to be mainly verbal, but simple mathematics and figures can of course be used. This may be especially relevant in problem 1. However, formal derivations beyond a basic level should not be (much) rewarded as we try to avoid giving incentives to spend valuable study time on learning to reproduce mathematics. Even if non-mathematical, thorough and rigorous expalanation is of course important.

The mark should be based on an overall assessment of the answers. If the overall impression is that a candidate deserves a specific mark the odd (not too serious) "slip" from this level should be tolerated.

Problem 1
A tax is distortionary where it causes a violation of the first best Pareto efficiency conditions. A tax on a commodity will distort the consumption bundle. One should show how the marginal rate of substitution will deviate from the marginal rate of transformation (marginal willingness to pay differs from marginal opportunity cost).
A tax on a commodity will also distort the trade-off between the commodity and leisure (distort the labour supply). The relevant marginal rate of substitution will deviate from the corresponding marginal rate of transformation. First order conditions for the consumer and the producer (written formally or explained in words) can be used to show the violations.

Problem 2
The participation problem is that an agent may choose between being work active or not. If not work active presumably no (positive) tax is being paid, but a benefit (transfer) may be received. If the agent is working and earning an income z a positive tax will be paid. The overall effective tax is then the tax paid on the income plus the benefit foregone. t(z) is is in this sense the avareage tax rate on labour income. This is known as the participation tax.

Working is assumed to be costly in terms of disutility or expenses incurred in order to be able to work (travelling, child care, etc.). It is socially efficient that the agent works when the (before-tax) income exceeds the cost, but a tax can make the net income fall short of the cost even where the before-tax income exceeds the cost. The marginal work-active person will incur a cost equal to the after-tax wage. When induced not to work the social (before-tax) income foregone exceeds the social cost saving and there is a social loss.
Increasing the participation tax will discourage participation and will inflict an efficiency loss on society that is larger the larger is the participation response reflected by the participation elasticity. Hence the tax rate is smaller the larger is the eleasticity cet. par. On the other hand the tax makes tax revenue available for transfers from those taxed to other parts of society. Appropriating income from those earning z is less costly in terms of welfare the smaller is the weight given to those who earn this income, g(z), and the higher is the tax rate.

We would like to know the participation elasticity and how it varies with income.The empirics is discussed in the article by Røed and Strøm on the reading lisst. Two major

finidings stand out. The participation elssticity is higher for women than for men and tends to be smaller for thosewith higher earnings capacity.

Problem 3

The underlying model is the Mirrlees model. The government uses a non-linear income tax for funding the provision of a public good and for distributional purposes. There are two types of agents – a low-skilled and a high-skilled. For distributional reasons the government wants to favour the former in its tax policy. But, due to asymmetric information, the government does not know the identity of the respective types. It is assumed to make available bundles of net and gross income, implicitly determining the income tax, and let the agents self-select subject to the self-selection constraint that the high-skilled does not pick the income bundle intended for the low-skilled ("mimics the low-skilled"). The high-skilled is referred to as the "mimicker" when imitating the low-skilled. The government is assumed to design the tax schedule and choose the amount of the public good in order to achieve a second best Pareto efficient allocation. Stated more accurately, one may say that he government maximises the utility of one type of agents for a fixed utility for the other type and subject to the self-selection constraint that the high-skilled (type 2) is not better off by mimicking the low-skilled (type 1) and the government budget constraint (or resource constraint of the economy).

Where the last term of the condition is zero it reduces to the Samuelson rule. The amount of the public good is chosen such that the sum of all individuals' marginal willingness to pay for the public good is equated to the unit cost of the public good. Can elaborate by discussing how otherwise everyone could be made better off.

Where the latter term is not zero the characterisation will deviate from the Samuelson rule. One is supposed to explain that by slightly changing G and the taxes imposed on the respective types and hence deviating from the Samuelson rule, government revenue can be maintained, the true low-skilled and the high-skilled can remain equally well off, but the self-selection constraint can be softened, enabling a Pareto improvement. Some elaboration is expected. There will be "underprovision" ("overprovision") according to the Samuelson rule where the mimicker values the public good more than the true low-skilled type.

Problem 4

This is considered a difficult problem and may serve to distinguish the top performances. The main purpose of the answer should be to explain what the underlying problem is and why transfers in kind may solve it.

Two major classes of cases may be considered.

One may take as point of departure the Mirrlees model where the skill level of an agent is private information (as discussed above). One can then show that by subsidising a private good not much used by the mimicker (an agent with more leisure than the true low-skilled), e.g. child care, one can alleviate the self-selection constraint and achieve a Pareto improvement. The subsidy is financed by appropriate changes in the income tax. (This is discussed in the text on mixed (commodity and income) taxation). By subsidising the price down to (close to) zero one has public provision (a transfer in kind). By combining the subsidy and income tax the mimicker can be made worse off, and mimicking is discouraged without making the true low-skilled and high-skilled worse off. To be elaborated.

The other case is one where a transfer to a group is desirable. The government wants to make transfers to a group that is “poor” or “needy”, but does not know the identity of the individuals in the group – there is asymmetric information. The key thing is that it is difficult to reach the target group without knowing its identitiy, and one has to rely on self-selection. A cash transfer is difficult (not feasible) because everybody can benefit from a cash transfer and will have an incentive to pretend to be eligible for the transfer. A better alternative may then be to use a transfer in kind, i.e. in terms of goods highly valued by the target group and not much valued by others. Even a small co-payment may then be sufficient to deter people outside the target group from opting in.

One possibility is that agents can choose between the public provision or opting out (buying the good in the market without receiving anything from the government). Another possibility is that the public provision can be supplemented in the market (topping up) but reselling is not possible. The exact discussion will depend on the specific case that the student chooses to address.

A relevant source is the survey article by Currie and Gahvari, section 4 in particular. .