1. (a) What is a Condorcet winner?
(b) It is often claimed that a number of countries have inefficiently high public debt. Explain why this could be the outcome in an economy where the government is not certain of winning upcoming elections.

2. We consider a legislature with 3 members, each representing a district. The legislature shall decide on the allocation of 5 military facilities. From a military point of view it does not matter where the facilities are located. A representative’s utility is equal to the number of facilities, which will be located in his district. The legislature’s rules are as follows. There is a maximum of two sessions. In the start of the first session an agenda setter is chosen at random, so each representative has 1/3 chance of becoming the agenda setter. The agenda setter proposes a plan for locating the facilities, a vote is held among the representatives. If a majority votes yes, the plan will be implemented, if a majority votes no, the representatives go for a drink and a sleep. Next day, the second session then takes place. As in the first session an agenda setter is chosen at random, this agenda setter subsequently proposes a plan for locating the facilities, and a vote is held. If a majority votes yes for the plan it is implemented, if a majority votes no, all facilities will be located in a different country. Representatives do not dislike dining, so a one delay in the decision (i.e. between session one and two) does not affect the utility derived from having facilities located in one’s district.

(a) Find the unique subgame perfect equilibrium (surviving elimination of weakly dominated strategies)
(b) Assume that the rules of the second session is changed so that the agenda setter of the first session has no chance of becoming agenda setter in the second session, and each of the other two has equal chance of becoming agenda setter. Find the unique subgame perfect equilibrium (again eliminating weakly dominated strategies).
(c) Discuss why it may be that there is a number of highways in northern Jutland, where traffic is not particularly intense.

3. Consider a world of nonenforceable electoral promises. Voters are all alike and have the utility function

\[ W(g, \tau) = y - \tau + H(g) \]

where \( y \) is exogenous income, \( \tau \) is taxes and \( g \) is the level of public goods provision. \( H(\cdot) \) is increasing and strictly concave. The incumbent \( I \) seeks to maximize his expected utility, which is

\[ E(v_I) = \gamma \tau + p_I R \]
where \( r \) denotes the level of rents for the incumbent in this period, and \( R \) are future rents. The parameter \( \gamma \), where \( 0 < \gamma < 1 \), captures transactions costs associated with rent extraction and \( p_I \) is the probability of reelection. The incumbent must satisfy the government budget constraint

\[
\tau = \theta g + r
\]

where \( \theta \) is the cost of providing public goods. Hence by choosing \( g \) and \( r \) he implicitly chooses \( \tau \).

(a) What is the optimal (first best) provision of public goods from the voters’ point of view?

(b) The timing of the political model is as follows:

\[
\begin{array}{cccc}
\text{Nature} & \text{Voters} & \text{Incumbent} & \text{Voters} \\
\theta & \text{set reservation utility } \bar{\omega}(\theta) & \text{chooses } g(\theta), r(\theta) & \text{vote}
\end{array}
\]

We assume that voters’ coordinate on a retrospective voting rule which is contingent on \( \theta \):

\[
p_I = \begin{cases} 
1 & \text{if } W(g(\theta), \tau) \geq \bar{\omega}(\theta) \\
0 & \text{otherwise}
\end{cases}
\]

The incumbent wants to maximize expected utility. Describe the choice facing the incumbent and derive the level of rents consistent with reelection of the incumbent.

(c) Characterize voters’ optimal reservation utility and interpret the results.

(d) The ombudsman wishes to bring down the level of rents to politicians. He considers two possible measures: (1) to increase transparency of the government budgets, which increases transactions costs associated with extracting rents, or (ii) to impose a one-term limit on being in office. Evaluate the two measures in the context of the model.

4. Discuss and compare the consequences of different electoral rules on, and alternative institutional solutions to, the problem of rents extraction.