

**Problem 1 (2p)** *Similarly to a model presented during classes consider a moral hazard model with two actions but risk averse principal, i.e. with utility  $\sum_i v(q_i - w_i)\pi_i(a)$ , for increasing, differentiable and strictly concave  $v$ .*

**Problem 2 (2p)** *Similarly to a model presented during classes consider a repeated for two periods moral hazard model but with different discount factors for the principal and agent:  $\delta_P$  and  $\delta_A$  respectively. Write the FOCs and discuss how different patience parameters influence the optimal long-term contract.*

**Problem 3 (3p)** *Consider the hidden information problem as analyzed during classes. Redo the first and second best calculations for the case of continuum of types, i.e.  $\theta \in [\underline{\theta}, \bar{\theta}]$  with density  $f(\theta) > 0$  and cdf  $F(\theta)$ . As an example solve for  $f$  uniform on  $[\underline{\theta}, \bar{\theta}]$  and with  $S(q) = \log q$ .*

**Problem 4 (3p)** *Consider the hidden information problem as analyzed during classes. Redo the first and second best calculations for the more general utility function of the agent:  $u(w) - C(q, \theta)$ , where  $u$  is strictly increasing, strictly concave and differentiable, while differentiable  $C$  satisfies:  $C'_q > 0, C'_\theta > 0, C''_{qq} > 0, C''_{q,\theta} > 0, C'''_{q,q,\theta} > 0$ .*