

**National University of Lesotho**  
**BA SUPPLEMENTARY EXAMINATIONS**  
**EC4320 – Information Economics**

**August 2023**

**100 Marks**

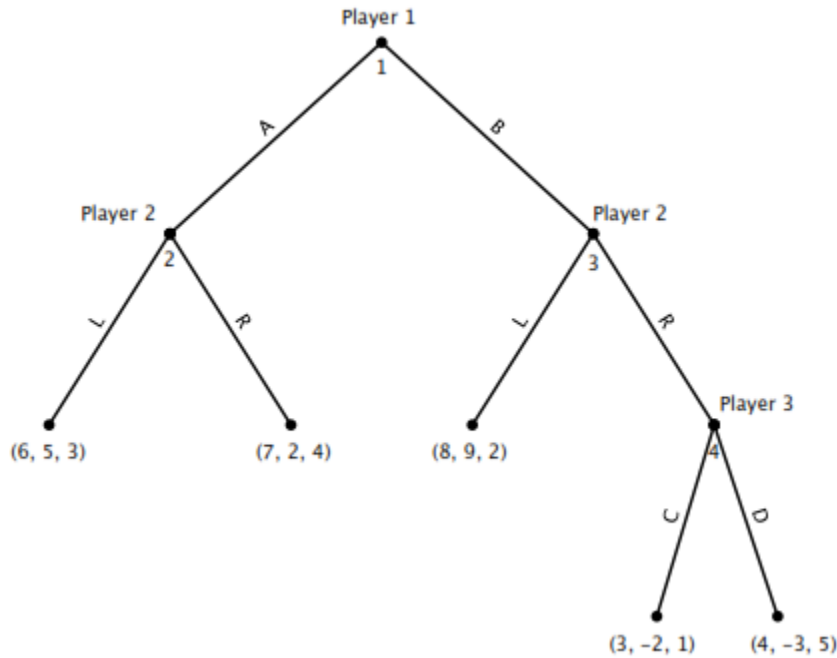
**3 Hours**

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**INSTRUCTION:** Answer **question one** and **any other three** questions.

**Question 1**

- a) What distinguishes a Nash equilibrium from a dominant strategy? [5]
- b) What kind of games does the prisoner's dilemma exemplify and why? [5]
- c) Consider the extensive form game represented below.



- i) Specify the players' strategies. [2]
- ii) Find all the Nash equilibria. [10]
- iii) Which equilibrium is sequentially rational? [3]

**Question 2**

- a) Asymmetric information occasions a unique problem referred to as the agency problem. Describe the agency problem and how it arises. [5]
- b) Corruption can be viewed not only as a problem of asymmetric information but also a sequential game. Explain with relevant examples. [10]
- c) Suppose Lesotho faces a lot of corruption, especially in the public sector, which results in poor service delivery.

- i) With reference to the possible solutions of asymmetric information problems cited in the literature, which one do you think can be most relevant for solving the problem of corruption in the public sector and why? [5]
- ii) Advise the government of Lesotho on how it can minimize corruption in the public sector in line with your answer in (i). [5]

### Question 3

Let  $u(w) = -(b - w)^c$ , where  $w$  represents the decision maker's wealth. Assume that  $w \geq 0$ .

- a) What restrictions on  $b$  and  $c$  are required to ensure that  $u(w)$  is *strictly* increasing and *strictly* concave? [10]
- b) Show that under these restrictions on  $b$  and  $c$ ,  $u(w)$  displays increasing absolute risk aversion. [15]

### Question 4

Suppose you own a house worth M2 million (this represents your wealth ( $W$ )) and there is a small chance that a fire will damage the house, leading to a loss ( $L$ ) of M750,000. Assume further that you have a logarithmic Bernoulli utility function over money:  $v(x) = \ln x$ . Assume that the probability of the fire  $\rho$ , and, hence, the probability of the loss  $L$ , is 0.02.

- a) What is your expected wealth across the loss and no loss states? [4]
- b) What is your expected utility across the loss and no loss states? *Round your answer to two decimal places.* [4]
- c) Suppose you can purchase insurance which will cover you completely in the event of a fire (i.e., your pay-out will be M750,000 if a fire occurs) but it will cost you  $X$  Maloti. What is the most you are willing to pay for the insurance? *Round your answer to two decimal places.* [8]
- d) What is the certainty equivalent of the lottery over the loss and no loss states? [5]
- e) Given your answers to a) and d) is the decision maker risk averse, risk neutral, or risk seeking? Explain. [4]

**Question 5**

Suppose that firms 1 and 2 face market demand,  $p = 100 - (q^1 + q^2)$ . Firms' costs are  $c^1 = 10q^1$  and  $c^2 = (q^2)^2$ .

- a) Calculate market price and each firm's profit assuming that firm 1 is the leader and firm 2 the follower. **[15]**
- b) Calculate market price and each firm's profit assuming that firm 2 is the leader and firm 1 the follower. **[10]**