Course name:	**Labour Market Economics**
Course code:	**EC2102**
Examiner:	**Ann-Sofie Kolm and Peter Skogman Thoursie**
Number of credits:	**7,5 credits**
Date of exam:	**15 August**
Examination time:	**3 hours**

Write your identification number on each paper and cover sheet (the number stated in the upper right hand corner on your exam cover).

Do not write answers to more than one question in the same cover sheet. Explain notions/concepts and symbols. If you think that a question is vaguely formulated, specify the conditions used for solving it. Only legible exams will be marked. No aids are allowed.

The exam consists of 6 questions. Each question is worth either 10 or 20 points, 100 points in total. For the grade E 40 points are required, for D 50 points, C 60 points, B 75 points and A 90 points.

Results will be posted on mitt.su.se three weeks after the exam, at the latest September 5.

Good luck!

Q1. (20 points) Sometimes matching models are used to explain the existence of involuntary unemployment in the labour market. Provide a short description of a matching model. Why does not the wage fall so to clear the market? Other types of models that explain the existence of involuntary unemployment are the efficiency wage models. Provide a short description of an efficiency wage model. Why does not the wage fall so to clear the market?

Q2. (10 points) Discuss labour supply over the business cycle. Describe the hypotheses of the *added worker effect* and the *discouraged worker effect*. Relate these hypotheses to real world observations. Can we expect both these hypotheses to explain labour supply behaviour over the business cycle? Does empirical evidence suggest the labour force participation is procyclical or countercyclical? Motivate.

Q3. (20 points) Assume a profit maximizing firm with a production technology represented by a Cobb-Douglas production function $Y = N^{\beta}$. Y is production, the positive parameter $\beta < 1$ is a technology parameter, and N is the number of employed workers.

a) Derive the profit maximizing firm's demand for labour (LD).

Assume that the supply side can be derived from monopoly union model where the union objective function is given by: $\Lambda = N[w + S - B] + \bar{N}B$ where Λ is union utility, B is unemployment insurance, $\bar{N}$ is the number of union members, N is the number of employed members, and S represents a fringe benefit (a fringe benefit is a benefit the firm give to their workers, such as free lunches). In accordance with the monopoly union model one can derive the following wage setting curve (WS): $w = \dfrac{B - S}{\alpha}$, where , $S < B$ is assumed.

b) Draw the wage setting curve (WS) and the labour demand curve (LD) in a figure with employment (N) on the X-axes and the wage (w) on the Y-axes.
c) Use the equations and the figure to explain how employment and the wage changes when the fringe benefit, S, is reduced?

Q4. (20 points)

(i)   Suppose all workers have the same preferences represented by

$$U = \sqrt{w} - 2x$$

where w is the wage and x represents whether the job involves a dirty work environment or not. There are only two types of jobs in the economy, a clean job ($x = 0$) and a dirty job ($x = 1$). Let w_0 be the wage paid by the clean job and w_1 be the wage paid for doing the dirty job. If the clean job pays $36 per hour, what is the wage in dirty jobs? What is the compensating wage differential? (10 points)

(ii)   Explain intuitively why it is difficult to empirically find evidence this theory. (10 points)

Q5. (20 points) Suppose that you access to information which quarter an individual is born, how many years the individual has been in school and the wage rate at the age of 40. Due to the legislation discussed in Angrist & Krueger (1991) those who are born in the first quarter have less years of schooling on average compared to those who are born in the other quarters.

Consider the following definitions:

QB = 1 if the individual is born in the first quarter, 0 otherwise
Wage = hourly wage rate
Sch = Years of schooling

The following estimations are performed
- Wage = 150 + 6Sch, suggesting that one additional year in school increase the hourly wage rate buy SEK 6.
- Sch = 16 – 0.4QB, implying that those who are born in the first quarter of the year have 0.4 less years of schooling compared to those born in the 2nd to 4th quarter of the year
- Wage = 140 – 2QB, implying that those who are born in the first quarter of the year have a 2 SEK less wage rate on average compared to those who are born in the 2nd to 4th quarter of the year

Calculate the return to schooling using the instrumental variable method i.e., using QB as an instrument for years of schooling. Compare the estimate of return to schooling of SEK 6 with this IV-estimate and explain intuitively why they differ. Which estimate do you prefer? Motivate.

Q6. (10 points) Explain intuitively why both taste based discrimination and statistical discrimination can imply that two individuals from two different groups, say men and women, can receive different wage levels even if they are equally productive.