nEcon 481/581 - Advanced Labor Economics – Midterm Exam 1

This is a closed book exam. NO notes or books are allowed. The total number of possible points on the exam is 100.

Part A: Brief Written Responses (25 points total, 10 questions worth 2.5 points each)

Indicate whether each of the following statements is true, false or uncertain and briefly explain your answer.

1. For a person who provides a positive number of labour hours, his indifference curve (at the quantity of labour supplied) is flatter than the budget line.

False: at positive quantities of labour supplied, the indifference curve is tangent to the budget line and yields an interior optimum. At this optimum, the slope of the indifference curve is equal to slope of the budget line.

2. The compensated wage elasticity (which reflects the substitution effect) tends to be higher in magnitude than the uncompensated, gross wage elasticity.

True: the uncompensated wage elasticity is the sum of the compensated and the income elasticities. The income elasticity is always negative (since Leisure is a normal good) the fact that makes the compensated elasticity (which reflects the pure substitution effects of wage variations) greater than the uncompensated one.

3. The participation rate shows the proportion of people that are working in the population.

False: the participation rate measures the proportion of people that are working in the working-age population i.e. the population that is 15 years of age or older.

4. In the neo-classical model of labor supply, the income effect causes a worker to work more hours if the wage rate decreases.

False: The income effect entails an increase in leisure hours and a decrease in work hours as the wage increases. This results from considering leisure a normal good.

5. If leisure is a normal good, a payroll tax causes an increase in hours worked.

False: A tax on wage reduces the after-tax income and therefore results in both an income and a substation effects. The former has a positive effect on labour supply due to the reduction in net income and the capacity to afford leisure, while the latter discourages the supply of labour given the lower compensation. The net effect of a payroll tax is therefore ambiguous and depends on the relative magnitude of these effects.

6. An increase in child care expenses (which are independent of income) will likely encourage those who are outside the labour force to participate in it.

   False: An increase in child care expenses shifts the budget line further down for those who decide to participate in the labour market. This discourages those who are currently outside the labour force (and who most likely have relatively steep indifference curves indicating strong preference for leisure) from participating in it because of the great loss welfare in welfare.

7. The reservation wage is defined as the maximum wage that an employer is willing to pay a worker for a given job.

   False: The reservation wage is the minimum wage an employee is willing to accept in order to offer his labour services.

8. The difference between a conventional welfare program and a negative income tax program is that for the negative income tax program, the worker receives a wage supplement for each hour that he/she works.

   False: Like with the welfare program, the negative income tax program taxes beneficiaries for the supply of work hours beyond the exemption level. This is done by reducing the amount of benefit for every dollar earned.

9. Over the backward bending portion of the labour supply curve, there is no longer a trade-off between income and leisure.

   True: Over the backward bending portion of the labour supply curve, as wage rate increases: the quantity of labour supplied decreases and, at the same time, the quantity consumed of leisure increases. Hence, the individual does not have to forsake leisure to earn a higher wage.

10. The income effect resulting from a promotion implies that a forward-looking consumer may well decide to maintain his supply of labour at a given age.

    False: The increase in wage resulting from a promotion is an unanticipated increase in income which was not factored into the calculation of the life-cycle budget line of a forward-looking individual. This results in a pure income effect that will lead the individual to consume more leisure and supply less labour at every given age during his life cycle.

Part B: Problems (75 points total, 3 questions)

1. **[25 points]** Suppose Bob has 50 hours available to work in a week and could earn $10 per hour when working. Bob has $100 per week in non-labour income. To start, assume that Bob chooses to work 20 hours per week.

   a) **[10 points]** Suppose Bob becomes a parent and now must pay $100 per week for child care if he works at all. Draw Bob's budget constraint before and after becoming a parent and briefly explain, with reference to any income and substitution effects, how becoming a parent might change Bob's labour supply choices.

   b) **[10 points]** Assume that as a parent, Bob chooses to work 25 hours per week. The governments in all provinces then introduce the following Child Care policy: They offer to cover all child care costs if an individual earns exactly $100 per week. For every dollar earned above $100 per week, they reduce coverage of child care costs by 50 cents. Given Bob's preferences, how is this policy likely to change his labour supply choice? Refer to any income and substitution effects associated with introducing this program.

   c) **[5 points]** Suppose the Quebec government decided to modify the program (to be different from the rest of Canada). They raise the lower threshold for receiving a child care benefit to $200 per week (maintaining the same type of reduction in benefits for every dollar earned over $200). Explain how the budget constraint would change for a parent in Quebec (use a new graph to clarify your answer).

2. **[25 points]** Suppose an EI program is introduced in which the replacement rate is 50%, the minimum number of weeks needed to qualify for the program is 20 weeks, and the maximum benefit duration is 10 weeks. Suppose the weekly market wage is $400. No waiting period is required and non-labour income, X, is equal to 0.

   a) **[10 points]** Assuming a non-leap year of 52 weeks, draw the individual's budget constraint before and after the introduction of this EI program. Clearly label all slopes of the budget constraints and relevant weeks on the leisure axis.

   b) **[10 points]** How might the following individuals react to the implementation of the EI program? Demonstrate and explain your answers with reference to the graph in part (a). Make reference to any income and substitution effects.
      (i) Person A worked 30 weeks prior to the EI program.
      (ii) Person B worked 50 weeks prior to the EI program.

c) **[5 points]** Suppose the minimum number of weeks needed to qualify is reduced to only 10 weeks. In a new graph, show and explain how the budget constraint would change. How will this policy change impact the size of the EI triangle and the decision to work on behalf of EI recipients?

3. **[25 points]** Consider the case of an underemployed worker who is constrained to 45 hours of work per week. The total endowment of hours per week is 168 (= 24 hours x 7 days).

a) **[5 points]** In a diagram, show the budget constraint and the optimal income-leisure combination for the underemployed worker.

b) **[10 points]** Illustrate how this worker would respond to an offer to work as many more hours as the worker would like at the going wage.

c) **[10 points]** Illustrate how this worker would respond to a payment of the moonlighting rate for hours of work beyond 45 hours.