DEPARTMENT OF ECONOMICS
QUEEN'S UNIVERSITY

ECON239: DEVELOPMENT ECONOMICS

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Final Examination

7:00 – 10:00 pm, Monday, April 22, 2005

General Instructions

This exam is THREE HOURS long. There are TWO SECTIONS each of which is worth 50 percent of the overall marks. Section A consists of eight short questions of which you should do five (5). Section B consists of four long questions of which you should do two (2).* Please answer all questions in the answer booklets provided.** If you attempt more than the required number of questions in each section make sure you delete the ones that you don't want marked. Hand held calculators are allowed.

GOOD LUCK!

* The candidate is urged to submit with the answer paper a clear statement of any assumptions made if doubt exists as to the interpretation of any question that requires a written answer.

** Please provide only your student number and not your name on all answer booklets.

Section A (50 percent)**:** Discuss the validity of FIVE (5) of the following statements. Your answer to each should be no longer than a page, and should include examples and diagrams where appropriate. All questions have equal value.

A1. Appropriate government intervention in the rural sector of developing countries is independent of the nature of the existing indigenous institutional arrangements that govern trade.

A2. World Bank policy on land reform now recognizes that full privatization of land ownership may not always be appropriate.

A3. Suppose we observe borrowers in the rural sector of a developing country borrowing from a moneylender who is charging them a high interest rate, even though there exist other low–interest lenders. We can infer that the borrowers are acting irrationally.

A4. Trade–credit interlinkages arise only because in some countries explicit charging of interest is forbidden.

A5. According to the nutritional efficiency wage theory, involuntary unemployment may occur in a rural labour market equilibrium.

A6. The neoclassical theory of fertility is inconsistent with the observation that fertility tends to decline with economic development.

A7. The Prebisch–Singer hypothesis is a sensible motivation for government intervention in international goods markets.

A8. Tariffs always have negative short–term effects on a country's citizens.

Section B (50 percent)**:** Answer TWO (2) of the following **Long Questions.** They are of equal value.

B1. A plot of land is owned by a Landlord but worked by a Tenant. If the Tenant invests working capital k he incurs a cost $C(k)$, which increases at an increasing rate with k. The value of output from the plot is given by the production function $y = \theta f(k) + x$, where $f(k)$ increases at a decreasing rate with k, and x represents random variations in output due to climatic conditions. The Landlord is risk–neutral, but the Tenant is risk–averse. The Landlord can monitor the output produced by the Tenant, but cannot observe the amount of working capital she invests.

(a) Using the above information, write down the incomes of the two parties under (1) a wage contract, (2) a rental contract and (3) a sharecropping contract.

(b) In each of these contracts describe how the risk is allocated between to two parties. What about the incentives faced by the Tenant to invest ?

(c) With the aid of a diagram, explain how the theoretical second–best efficient output share, β^* (and the associated investment level, k^*), is determined in a share–cropping contract.

(d) Using the same diagram as in **(c)** illustrate the efficiency loss under the sharecropping contract, relative to the full–information case.

(e) Suppose a new high–yielding crop variety becomes available, which increases the productivity of working capital used in agriculture, θ. According to the above theory, how should this affect the optimal sharing rule ? Explain.

B2. A farmer requires 20 Rupees to invest in fertilizers and farming equipment. She has 10 Rupees of her own savings to invest and borrows the remaining 10 from a local moneylender using a **standard debt contract**. The rate of interest on the debt is a 10%. The farmer can choose whether to cultivate wheat or corn, both of which involve some risk due to environmental conditions. Wheat cultivation yields a crop value of 40 Rupees with probability $\frac{1}{2}$, and 10 Rupees with probability $\frac{1}{2}$. Corn cultivation yields a crop value of 50 Rupees with probability $\frac{1}{2}$ and 0 with probability $\frac{1}{2}$.

(a) What are the total expected return net of total investment from wheat and corn cultivation ? Which crop is more risky ?

(b) Calculate the expected returns to the farmer and the moneylender, respectively, net of their investments, from each crop.

(c) Why would the farmer and the moneylender disagree about which crop should be planted ? Explain carefully, with the aid of a diagram.

(d) What kinds of economic institutions in the credit market would you expect to arise in response to this kind of fundamental problem ? How would you expect such institutions to vary across the formal and informal sectors and why?

(e) What are the implications of the nature of informal sector credit market institutions for government attempts to lend directly at low interest rates to borrowers in the rural sector ?

B3. Consider a simple economy with only two sectors — urban and rural. Workers in the urban sector who do not obtain formal sector jobs are assumed to be able to obtain informal sector jobs. The wage in the informal sector is fixed at $w_I = 10$. There are 10 million workers in the economy and they are all identical and risk–neutral. The following table represents the marginal product of labour (MPL) in the two sectors for various levels of employment:

Workers (millions)	Urban MPL Formal	Rural MPL
0	50	40
1	45	36
2	40	32
3	35	28
4	30	24
5	25	20
6	20	16
7	15	12
8	10	8
9	5	4
10	0	0

(a) In a competitive equilibrium (with no distortions) the number of workers in the urban formal sector is approximately 5.5 million and the equilibrium wage is approximately 22. Explain why. What is the number of informal urban workers in such an equilibrium.

(b) Now suppose the formal sector wage is raised to $w_F = 30$. What would be the demand for workers in the formal sector? Starting from the situation in part **(a)**, what would be an estimate of the probability of obtaining a formal sector job? Would workers start to migrate? Explain

(c) Compute the probability of obtaining a formal sector job, when the number of workers who have migrated to the urban sector is equal to 2, 3, 4, 5, 6, 7, 8 and 9 million respectively. (Note: a probability cannot exceed 1).

(d) Use the values from part **(c)** to compute the expected wage in the urban sector at each of these migration levels.

(e) In the resulting Harris–Todaro migration equilibrium, the equilibrium wage in the rural sector is approximately 23.5. Explain why this is? Estimate how many more workers migrate relative to the competitive equilibrium? Explain how you deduced this.

B4. Indostania is a hypothetical developing country that produces and consumes two goods — cotton and electronic components — using two factors of production — land and labour. Cotton production uses land relatively more intensively, so that electronics production uses labour relatively more intensively. Indostania is a small open economy that trades freely in international markets, and faces world prices for cotton given by P_C and for electronics given by P_E.

(a) On a diagram showing the economy's production possibilities frontier and indifference curves, illustrate a situation where the world relative prices of cotton and electronics are such that Indostania exports cotton and imports electronics.

(b) Suppose that, as the world economy grows richer it spends an increasing proportion of its income on electronic components and a decreasing proportion on cotton. Illustrate on a diagram, like the one in part **(a)**, how this is likely to affect the consumption and production of the two goods in Indostania, and hence the exports/imports of each.

(c) Explain the distributional consequences of the changes described in **(b)** for landowners and workers.

(d) Suppose the government of Indostania recognizes that the relative demands for the two goods are likely to continue to change in this way in the future. How would you expect this perspective to influence its trade policy? Under what conditions would this intervention be justifiable on economic grounds?

(e) Assuming that cotton production is concentrated in rural areas and electronics production is concentrated in urban areas, how might such an interventionist trade policy affect relative wages, internal migration and urban living conditions? What problems might arise, in the long run, as a consequence of the policy described in **(d)**?