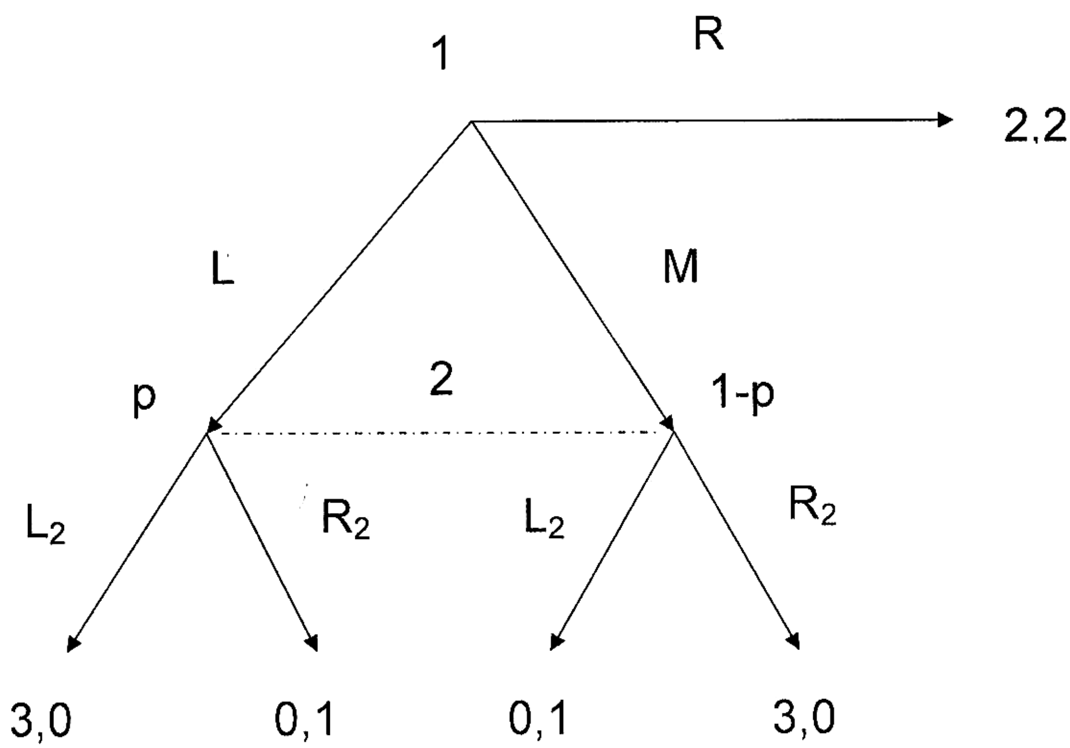
MASTER OF ARTS EXAMINATION, 2019
2ND YEAR, 4TH SEMESTER
ECONOMICS (HONOURS)
COMPREHENSIVE
Use separate answer script for each group
For excellence and relevance: 2 marks

Time: Two and a half hour | Full Marks: 50

Group A: Microeconomics

1. (a) Show that there does not exist any pure-strategy perfect Bayesian equilibrium in the following extensive form game:



8

(b) A firm has a production function given by $f(x_1, x_2) = min\{2x_1 + x_2, 2x_2 + x_1\}$. Also suppose the price of input x_1 is w_1 and x_2 is w_2. Show that if $\frac{w_1}{w_2} = 2$ holds then after cost minimization $w_2 y = \frac{w_1 y}{2}$ holds. 8

Or

2. (a) An individual has Bernoulli utility function $u(.)$ and initial wealth w. Let lottery L offer a payoff of G with probability p and a payoff of B with probability 1-p. If the individual

owns the lottery what is the minimum price he would sell it for? If the individual does not own the lottery what is the maximum price he would be willing to pay for it? 12

(b) Explain whether the following statement is True, False or Uncertain:

"Iterated elimination of strictly dominated strategies always yields a unique prediction in a game". 4

Group B: Macroeconomics

3. Answer any one of the following questions:

(a) Explain the following (i) Natural Rate Hypothesis and (ii) Rational Expectations.

4+4=8

(b) (i) How do you distinguish between Keynesian Macroeconomics and New Keynesian Macroeconomics? (ii) Why may menu cost lead to price rigidity? 4+4=8

4. (a) Consider an overlapping generations model with utility function

$U(t)=\ln C_{1t} + \beta \ln C_{2t+1}$

where C_{1t} is the consumption of representative agent in 1st period (t) of his life and $C_{2\,t+1}$ is the consumption in 2nd period of his life. In the 1st period, he inelastically supplies one unit of labour and earns wage w_t. They consume part of their 1st period income and save rest to finance 2nd period consumption. The saving of the young in period t generates the capital stock that is used to produce output in period t+1. Also, suppose rate of growth of population is n. Let the production function be

$Y = K^{\beta} L^{1-\beta} + vK$

(i) Find out the dynamic equation of k_t (the equation that relates k_t and k_{t+1}).

(ii) Discuss the dynamic behaviour of the equilibrium. 4+4

Or

(b) Consider a standard Ramsey model with the production function $Y = K^{\beta} L^{1-\beta} + vK$

Will this model generate positive growth rate? Is the growth rate obtained in this model exogenous or endogenous? Discuss the dynamic behavior of this model around the equilibrium value using phase diagram. 4+4

Group C: Econometrics

5. Write short note (any one) 4x1=4

(a) Simultaneous equation bias

(b) Problem of identification

6. (a) Distinguish between trend stationary process and Difference stationary process highlighting its major characteristics. 4

Or

(b) Explain Box Jenkins Method of Analysis in the context of Time series model building. 4

7. (a) Consider the least square estimates of the model: $y_{N\times1}=X_{N\times K}\beta_{K\times1}+u_{N\times1}$, where $E(u|X)=0$ and $E(uu'|X)=\Sigma=\sigma^2(I+AA')$, where A is an N x m matrix with $K < m < N$. Assume, for simplicity, that σ^2 and A are known.

(i) Obtain the variance of the OLS estimator of β.

(ii) Compare your answer in (i) with default OLS variance $\sigma^2(X'X)^{-1}$. Are the default OLS standard errors biased/inconsistent in any particular direction?

(iii) Determine the variance of the GLS estimator of β, using the result $(I + AA')^{-1} = I_N - A(I_m + A'A)A'$.

(iv) Compare the default variance $\sigma^2(X'X)^{-1}$of OLS with the true variance of GLS. Does your finding violate that fact that GLS must be BLUE when disturbances are non-spherical? 8

Or

(b) Suppose family i chooses annual consumption c_i (in dollars) and annual contribution to a charitable fund q_i (in dollars) to solve the problem

$$\max_{c,q} c + a_i \log(1 + q)$$

subject to the constraint $c + p_i\, q \leq m_i$; $c, q \geq 0$, where m_i is the annual income of family i, p_i is the price of one dollar of charitable fund (where $p_i < 1$ because of tax-deductibility of charitable contributions) and this price differs across families because of different marginal tax rates and different state tax codes, $a_i \geq 0$ determines marginal utility of charitable contributions. Consider m_i and p_i to be exogenous to the family in this problem.

(i) What is the optimal solution for q_i?

(ii) Define $y_i = 0$ if $q_i = 0$ and $y_i = 1$ if $q_i > 0$. Suppose $a_i = \exp(z_i\gamma+v_i)$, where z_i is a Jx1 vector of observable family traits and v_i is unobservable. Assume that v_i is independent of (z_i, m_i, p_i) and v_i/σ has symmetric distribution function G(.), where $var(v_i) = \sigma^2$. Show that,

$$P(y_i = 1|z_i, m_i, p_i) = G[(z_i\gamma - \log p_i)/\sigma].$$

8