

Master of Arts Examination: 2018(Old)
 (2nd Year 4th Semester)
Economics
 Comprehensive-II

Time: Two and half hours

Full Marks:50

(Use separate answer-script for each group)

Group: A (25 Marks)

Answer any two from the following

Q. 1. Give the Economic meaning of : Initial and endpoint conditions on state variable. 12.5

Q2. Why do we need transversality condition to solve optimal control problem?

12' 5

Q3. Solve the optimal control problem

$$\text{Maximize } \int_0^1 -u^2 dt$$

$$\text{Subject to } \frac{dx}{dt} = x + u$$

$$x(0) = 1,$$

$$x(1) = 0$$

12.5

Q4. Define Control Variable, State and Costate Variable in the context of Optimal control problem.

4+4+4.5

[Turn over

GROUP - B (25 marks)

5. (a) Explain the concept of Co integration. Discuss one suitable method for testing co integration between two variables.
 (b) What is the main difference between the random effect model and the fixed effect model?
 (c) Define simultaneous equation bias with the help of a suitable model.

(d) Suppose that in the linear model $y = \mathbf{x}\beta + u$, where \mathbf{x} contains unity, $E(\mathbf{x}'u) = 0$, $\text{var}(u|\mathbf{x}) = \sigma^2$ but $E(u|\mathbf{x}) \neq E(u)$.

(i) Is it true that $E(u^2|\mathbf{x}) = \sigma^2$?

(ii) What is $\widehat{Avar}(\hat{\beta})$?

6+3+4+12

OR,

6. a) Let the N -vector \mathbf{y} be a vector of mutually independent realizations from the uniform distribution on the interval $[\beta_1, \beta_2]$. Let $\hat{\beta}_1$ be the maximum likelihood estimator of β_1 given by $\hat{\beta}_1 = \min(y_t)$, $t = 1, \dots, N$ and the true values of β_1 and β_2 are 0 and 1, respectively. Find the cdf of $\hat{\beta}_1$.

b) Explain Augmented Dickey Fuller Test Procedure.

c) Discuss the problem of identification in simultaneous equation system.

d) What are the basic difference in the assumptions of the random effect model and fixed effect model?

13+3+4+5