

RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

B.A./B.Sc. FOURTH SEMESTER EXAMINATION, MAY 2017

SECOND YEAR [BATCH 2015-18]

ECONOMICS (Honours)

Date : 18/05/2017

Time : 11 am – 3 pm

Paper : IV

Full Marks : 100

[Use a separate Answer Book for each group]

Group – A

1. Answer **any four** questions : [4×5]
- a) Derive the residual sum of square (RSS) in a regression model without intercept term. [5]
 - b) Explain how White's test can be applied to estimated residuals to detect Heteroscedasticity in a Multiple Linear Regression Model. [5]
 - c) State and explain the problems associated with using the Durbin-Watson test for detecting autocorrelation in a linear regression model. [5]
 - d) Derive the expression for co-variance between the intercept and the slope estimates in a two-variable linear regression model. [5]
 - e) In case of two variable regression with intercept, show $r^2 = t^2 / (t^2 + n - 2)$, the expressions having their usual meanings. [5]
 - f) Suppose that grades on a midterm and final have a correlation coefficient of 0.5 and both exams have an average score of 75 and a standard deviation of 10.
 - (i) If a student's score on the midterm is 95, what would you predict his score on the final to be?
 - (ii) If a student scored 85 on the final, what would you guess about his score on the midterm? [3+2]
 - g) In the context of simple linear regression with intercept between y & x (y : dependent & x : independent), show that the coefficient of determination coincides with the squared coefficient of correlation between y & x . [5]

Answer **any two** questions from **Question Nos. 2 to 5** : [2×15]

2. Suppose a two-variable regression model (i.e. just one independent variable) is plagued with autocorrelation. Further assume that the successive errors are related through first-order autoregressive scheme. Unaware of all these, you fit an OLS regression and go about testing whether the slope parameter is zero or not. Show, with necessary algebraic calculations, how such an attempt can lead to erroneous inference. [15]
3. State the assumptions of CLRM. Derive the OLS estimators of the parameters in the context of two-variable regression and prove the Gauss-Markov theorem (it'll suffice to prove this for estimated slope parameter). [5+10]
4. a) In the model $y_i = \beta_2 x_i + u_i$ you are told that $v(u_i) = \sigma^2 x_i^2$. Show that $v(\hat{\beta}_2) = \frac{\sigma^2 \sum x_i^4}{(\sum x_i^2)^2}$. [8]
- b) Describe Goldfeld-Quandt test for the detection of Heteroscedasticity. [7]
5. a) In the context of Cobb-Douglas production function, describe the steps involved in testing the hypothesis of 'constant returns to scale'. [7]
- b) Suppose you decide to switch over from a two variable regression model (i.e. with one independent variable) to a three variable regression model (i.e. with two independent

variables). How do you test for the efficacy of the added independent variable? [Assume both regression models are with intercept] [8]

Group – B

6. Answer **any four** questions : [4×3]

- a) Discuss the Lender's Risk Hypothesis to address the incidence of exorbitantly high rates on credit in rural economies of developing nations.
- b) Why do you think in the context of land markets in developing nations a contract with eviction may be widely employed?
- c) Briefly discuss about the problems of labour markets in developing nations? Can you argue why either land or labour market alone cannot solve the problems of rural economy in developing nations?
- d) Suppose there is an institutional lender in a rural credit market that offers any loan to its potential borrower at the rate of 10% p.a. Now a borrower submits two project appraisals each worth Rs. 200000 where the first one pays her off 15% and the second one 20% with certainty. Which project will be sanctioned by the institutional lender to its borrower? How will the parties, the lender and the borrower rank them?
- e) Define Rent Seeking.
- f) What do you mean by government failure?
- g) Mention two limitations of the Lewis model.
- h) What is microfinance?

Answer **any one** question from **Question Nos. 7 & 8** : [1×8]

7. Discuss the major policy issues associated with the Harris-Todaro model. [8]
8. Define institutions. Why are institutions critical for economic development? Answer with suitable examples. [8]

Answer **any two** questions from **Question Nos. 9 to 12** : [2×15]

9. a) What is the Marshallian efficiency argument of the tenancy contract? [2·5]
b) Why is the share cropping practice inefficient? [2·5]
c) Why is even more than 100% retention of output in fixed rent tenancy contract considered to be inefficient even though the tenant has a positive incentive to put in extra effort? [2·5]
d) Argue why the practice of share cropping tenancy contract is predominant in rural land markets while the fixed rent is better option from societal point of view. [5]
e) What are the alternatives to which a risk-neutral landlord might consider to replace the share cropping tenancy contract? What are the problems associated with those alternatives? [2·5]
10. a) Use a nutrition based model of labour market analysis to show the coexistence of voluntary and involuntary unemployment at equilibrium, which the formal labour market analysis fails to address. Why do you think this is the case? [4]
b) Discuss the effect of inequality in asset holding (in terms of asymmetric land distribution that works as a source of non-wage income) on rural labour market for casual labourers. [3]
c) What do you mean by credit rationing? [2]
d) Show that when the lender's valuation of collateral is less than that of the borrower's combined valuation of the same collateral, then the loan taken by the borrower will not be defaulted. [4]
e) Can you imagine a situation where the lender actually wants the borrower to commit default? [2]

11. Show with respect to Sen's model that zero marginal productivity of labour is neither necessary nor sufficient for the existence of surplus labour. [15]
12. What do you mean by economic roles of government in the context of economic development? What are the major reasons behind government failure? Explain in this context, the emergence of rent-seeking activities. Point out when such activities are classified as forms of corruption. [5+4+3+3]

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