

RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

B.A./B.Sc. FIFTH SEMESTER EXAMINATION, MARCH 2021

THIRD YEAR [BATCH 2018-21]

ECONOMICS (Honours)

Paper : VI

Date : 13/03/2021

Time : 11 am – 3 pm

Full Marks : 80

Group-A

Answer any three questions from question nos. 1 to 5:

[3×10]

1. Consider the general linear model

$$Y = X\beta + \varepsilon, \varepsilon \sim MN(0, \sigma^2 I)$$

Two forms of the design matrix 'X' are provided below :

$$X = \begin{pmatrix} 1 & 2 & 4 \\ 1 & 3 & 9 \\ 1 & 4 & 16 \\ 1 & 5 & 25 \\ 1 & 6 & 36 \end{pmatrix} \quad \text{or} \quad X = \begin{pmatrix} 1 & 2 & 4 \\ 1 & 3 & 6 \\ 1 & 4 & 8 \\ 1 & 5 & 10 \\ 1 & 6 & 12 \end{pmatrix}$$

Explain which form of X would you choose to be able to come up with unique OLS estimation.

[10]

2. Consider the linear model :

$$y_i = \alpha + \beta x_i + \gamma z_i + \varepsilon_i \quad ; i = 1, 2, 3, 4$$

Suppose $E(\varepsilon_i) = 0$; $V(\varepsilon_i) = 4$; $Cov(\varepsilon_i, \varepsilon_j) = -2$; $\forall i \neq j$ and every other CLRM assumption is satisfied.

- a) Would you be able to estimate α, β, γ ? And if 'yes', then would the estimators be 'Unbiased'?
- b) Would the estimators be 'BLUE'? If not, then make the suitable modification of the above assumptions and then prove that the OLS estimators are BLUE. [(1+2)+(1+6)]

3. Consider the following model

$$y_i = \alpha + \beta x_i + \gamma D_i + u_i$$

When y_i = annual expenditure on healthcare of the i^{th} family, x_i = annual income of the i^{th} family, D_i is a dummy variable that takes value 1 if the i^{th} family belongs to urban area and 0 if rural area, and u_i is the error term with all OLS assumptions.

- a) Interpret the meaning of α, β , and γ in the above model.
- b) How would you test, in terms of the above model, whether there is any difference in health care expenditures of the families from urban and rural areas? [3+7]

4. a) Explain why a value of VIF which is greater than 10 can be used as the indicator of the presence of multicollinearity?

- b) Explain why a high value of the variance of the estimated regression coefficient can also indicate a situation of micro-numerosity. [6+4]

5. a) What are the drawbacks of LPM? [4+6]
 b) How, using LOGIT model, do you overcome the drawbacks of LPM?

Group - B

Answer **any one** question from **question nos. 6 & 7:** [1×10]

6. a) What is forward exchange market? How forward exchange rates are determined? Illustrate with an example. [3]
 b) What is Marshall – Lerner condition? Derive it mathematically and explain intuitively. [4]
 c) What do you mean by sterilization of money supply? What happens when central monetary authority does not sterilize money supply after an increase in domestic expenditure? [3]
7. a) Explain the PPP condition with an example. [2.5]
 b) Explain Hume's Price – Specie flow mechanism in connection to the PPP condition. What is Mundell's income – specie flow mechanism? [2.5]
 c) Explain the effect of increase in money supply in small country case on the equilibrium exchange rate, trade balance and income under the floating system and also under the fixed system. [5]

Answer **any one** question from **question nos. 8 & 9:** [1×15]

8. a) Explain the concept of SWAN diagram [7]
 b) Suppose a country starts with high level of domestic unemployment and also with gigantic trade deficit as an initial condition. Show in the SWAN diagram what are the policy alternatives the country has in order to solve the problems of internal and external balances. [2]
 c) Explain the effect of devaluation on output and trade balance under imperfect capital mobility. How would your result differ when there is no capital mobility at all and there is perfect capital mobility? (Explain graphically only) [3]
 d) What is arbitrage in international currency market? [3]
9. a) Derive the small country open economy multiplier and the large country open economy multiplier of autonomous changes in expenditure. [5]
 b) Compare the small and large country open economy multiplier of autonomous expenditure change with the closed economy case. [3]
 c) calculate the extent of trade deficit after an increase in the autonomous import in small country case and compare it with the large country case as well. [3.5]
 d) Show that the effect of change in autonomous domestic expenditure and autonomous export on domestic output are same but they have opposite effect on the trade balance condition. (assume initially trade balance condition was satisfied). [3.5]

Answer **any three** questions from **question nos. 10 to 13** :

[3×5]

10. Suppose Indian government wants to ensure justice to the agricultural sector by allowing free bargaining between the farmers and industrial houses. Do you think such arrangement will lead to efficient outcome? Explain
11. What is the difference between the Pareto efficiency conditions in private vis-à-vis public sector?
12. What are the benefits of expenditure tax compared to income tax? What are the reasons for such wide use of income tax then?
13. Show that equal proportional sacrifice leads to more progressive taxation compared to equal absolute sacrifice

Answer **any one** question from **question nos. 14 & 15** :

[1×10]

14. Explain the concept of Richardian equivalence. What are its problems?
15. a) Distinguish between burden and excess burden of taxes.
b) Explain the concepts of consumer and producer excess burdens of tax.
c) How income tax affects supply of factor of production?

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