

## SIXTH SEMESTER B.A. DEGREE EXAMINATION, MARCH 2013

(CCSS)

## EC 6B 11—MATHEMATICAL ECONOMICS AND ECONOMETRICS

Time : Three Hours

Maximum Weightage : 30

*Answers may be written either in English or in Malayalam*

## Part A

*Answer all questions*

- If  $Q = f(P)$  is the supply function then its slope is given by:
  - $\frac{dQ}{dP} \leq 0$
  - $\frac{dQ}{dP} \geq 0$
  - $\frac{dQ}{dP} > 0$
  - $\frac{dQ}{dP} < 0$
- When  $U = f(X)$  is the utility function, diminishing marginal utility is implied by:
  - $\frac{d^2U}{dX^2} = 0$
  - $\frac{d^2U}{dX^2} > 0$
  - $\frac{d^2U}{dX^2} \geq 0$
  - $\frac{d^2U}{dX^2} < 0$
- When the demand for a good is given by  $q = 10 - 0.05p$  the price elasticity of demand is given by:
  - $-0.05 \frac{p}{q}$
  - $-0.05 \frac{q}{p}$
  - $0.05 \frac{p}{q}$
  - $0.05 \frac{q}{p}$
- When the isoquant is given by the function  $Q^o = K^{0.1}L^{0.2}$  the Marginal rate of Technical substitution between labour for capital ( $MRTS_{LK}$ ) is given by:
  - $0.67 \frac{K}{L}$
  - $-0.67 \frac{K}{L}$
  - $0.67 \frac{L}{K}$
  - $-0.67 \frac{L}{K}$
- The stochastic term in a regression model does not stand for:
  - Omitted variables
  - Functional form misspecification
  - Probable factors not included in the model
  - Standard error
- The utility function  $U = X^{0.5}Y^{0.2}$  is homogeneous of degree:
  - One
  - Less than one
  - More than one
  - Zero
- A market is in stable equilibrium when the slopes of the demand and supply curves are respectively:
  - Positive and Negative
  - Negative and Positive
  - Equal
  - Zero

Turn over

8. Linear programming is a mathematical method of:
- a) Optimisation                      b) Maximisation  
c) Minimisation                      d) Finding the inflexional value
9. Given the saving function  $S = -200 + 0.25Y$  the multiplier coefficient is given by:
- a)  $\frac{1}{4}$                       b) 0.75                      c) 0.25                      d) 4
10. Time series data is related to data arranged for:
- a) Period of time                      b) Point in time                      c) Neither a) nor b)                      d) Either a) or b)
11. Ordinary Least Square method of regression is:
- a) Bayesian method                      b) Classical method  
c) Single Equation method                      d) System method
12. Cost elasticity is the ratio of :
- a) Average Cost to Marginal Cost                      b) Marginal Cost to Average Cost  
c) Average Cost to Total Cost                      d) Marginal Cost to Total Cost

$$(12 \times \frac{1}{4} = 3 \text{ Weightage})$$

**Part B (Short Answer type Questions)**

*Answer all questions*

13. Define a function
14. How do you distinguish between demand and supply functions.
15. Explain how profit function is derived from revenue and cost function.
16. Define marginal cost mathematically.
17. Define income elasticity of demand.
18. What is linear programming?
19. State the conditions for a function to attain maximum value.
20. Distinguish between long run and short run production function.
21. What is population? (9 × 1 = 9 Weightage)

**Part C (Short Essay/Paragraph type Questions)**

*Answer any five questions out of seven.*

22. Given the consumption function  $C = 500 + 0.8Y$  derive the saving function in a two sector model.
23. Explain the significance of point of inflection in the total product curve.

24. Show that the marginal cost curve cuts from below at the minimum point on the average cost curve.
25. What are the different data types used in econometric analysis? Explain.
26. What are the different interpretations given to the stochastic disturbance term in a regression equation?
27. Distinguish between statistic and parameter.
28. State the conditions of constrained utility maximisation.

(5 × 2 = 10 Weightage)

#### Part D Essay Questions

*Answer any two questions out of three*

29. Given the demand function in terms of three prices and income as  $Q_1 = -0.5P_1 + 0.25P_2 + 0.2P_3 + 0.1Y$ , define and find own price, cross price and income elasticity of demand and interpret the result.
30. State any Four properties of Cobb-Douglas production function.
31. Given the estimated consumption function as  $\hat{C} = 150 + 0.65Y$ ;  $r^2 = 0.80$ , where  
(2.56) (3.06)  
the numbers in parentheses are the  $t$  values and  $r^2$  is the coefficient of determination, interpret the significance of the fit.

(2 × 4 = 8 Weightage)