

PG Odd Semester (CBCS) Exam., December—2016

ECONOMICS

(3rd Semester)

Course No. : EC-304 (C)

Full Marks : 75

Pass Marks : 30

Time : 3 hours

*The figures in the margin indicate full marks
for the questions*

Candidates are to answer *either* EC-304 (A) (C)
or EC-304 (B) (C) *or* EC-304 (C) (C)

Course No. : EC-304 (A) (C)

(**Econometrics—I**)

Answer **five** questions, selecting **one** from each Unit

UNIT—I

1. (a) What do you mean by the following terms?
 - (i) Goodness of fit
 - (ii) Analysis of variance (ANOVA)
- (b) What is the relation between regression slope and correlation coefficient?

- (c) You are given the following results from a regression exercise :

$$\hat{Y}_i = 0.7264 + 1.0598X_i$$

(0.3001) (0.0728)

$$r^2 = 0.4710; \quad F(1,238) = 211.895$$

df = 238 (figures in parentheses are standard errors). Now answer the following :

- (i) Test the null hypothesis that the coefficient of X is equal to 1.
- (ii) Test the hypothesis that the intercept is zero.
- (iii) What does the value of r^2 signify?
 $(2+2)+3+(3+3+2)=15$

2. (a) Differentiate between the following :

- (i) True model and Estimated model
- (ii) Parameter and Estimate

- (b) Show that $F = t^2$ in case of 2-variable linear regression.

(3)

(c) A sample of 12 observations for a 2-variable linear model $Y_i = \beta_0 + \beta_1 X_i + u_i$ gave the following results :

$$\sum X_i = 4200, \sum (X_i - \bar{X})^2 = 46,509.96$$

$$\sum Y_i = 3861, \sum (Y_i - \bar{Y})^2 = 40,068.24$$

$$\sum (X_i - \bar{X})(Y_i - \bar{Y}) = 43,145.04$$

Using these results estimate β_0 and β_1 along with their variances. Obtain 95% confidence intervals for $\hat{\beta}_0$ and $\hat{\beta}_1$.

$$(2+2)+3+(3+3+2)=15$$

UNIT—II

3. (a) Define the following terms :

(i) Adjusted R^2

(ii) Overall significance of a multiple regression model

(b) The following results were computed on the basis of data for 45 developed countries :

$$\log \hat{C} = 4.30 - 1.34 \log P + 0.17 \log Y$$

(0.09) (0.32) (0.20)

(Figures in parentheses are standard errors.) $\bar{R}^2 = 0.27$

(4)

Here,

C packs of tobacco consumption per year

P real price of tobacco per pack

Y per capita real income

Now answer the following :

(i) Interpret the given results.

(ii) What is the elasticity of demand for tobacco with respect to price? Is it statistically significant?

(iii) How would you compute R^2 value from \bar{R}^2 value? $(2+2)+(3+5+3)=15$

4. (a) Define the following :

(i) Likelihood ratio test statistic

(ii) log-likelihood function

(b) You are given the following regression results :

$$\hat{Y}_i = 16899 - 2978.5X_{1i} + \dots \quad (1)$$

(8.5152) (4.7280)

$$R^2 = 0.6149$$

$$\hat{Y}_i = 9734.2 + 3782.2X_{1i} - 2815X_{2i} + \dots \quad (2)$$

(3.3705) (6.6070) (2.9712)

$$R^2 = 0.7706$$

(Figures in parentheses are computed t -values).

Now answer the following :

- (i) Find out the sample size underlying these results.
- (ii) Interpret these results.
- (iii) Which model would you prefer and why? (2+2)+(3+4+4)=15

UNIT—III

- 5. (a) What are the consequences of applying OLS under heteroscedastic disturbances? Explain.
- (b) How would you apply the Breuch-Pagan test for the detection of heteroscedasticity?
- (c) Point out standard remedial measures in the context of estimation under heteroscedasticity. 5+5+5=15
- 6. (a) Under the assumption that the random disturbance term follows AR(1) scheme, explain the GLS estimation procedure to estimate parameters of the generalised model $y = X\beta + u$. (Symbols have usual meanings.) 9
- (b) Elaborate the Cochrane-Orcutt iterative procedure in the context of estimation under autocorrelation. 6

UNIT—IV

- 7. (a) Demonstrate the use of independent dummy variables to test for structural stability of regression equations. 7
- (b) Explain the use of dummy variables in seasonal adjustment of time series data. 8
- 8. (a) Is the probit an improvement over the linear probability model in the context of limited dependent variable model? If so, why?
- (b) Is R^2 an appropriate measure of goodness of fit in case of binary dependent variable model? Hence suggest alternative goodness of fit measures under such models. 7+(2+6)=15

UNIT—V

- 9. (a) Demonstrate the use of Koyck lag scheme in regression with lagged regressors.
- (b) Elaborate how such models are estimated when the disturbances are autocorrelated. 8+7=15
- 10. Write brief notes on any *two* of the following : 7½×2=15
 - (a) Adaptive expectations
 - (b) Almon's scheme of lag
 - (c) Partial stock adjustment models

(7)

Course No. : EC-304 (B) (C)

[**Mathematical Economics—I**]

Answer **five** questions, selecting **one** from each Unit

UNIT—I

1. (a) Assess the role of the Lagrangian multiplier in case of a consumer maximising her utility subject to her budget constraint.
(b) Show that law of diminishing marginal utility is neither necessary nor sufficient for diminishing marginal rate of substitution. 8+7=15

2. (a) Consider a consumer who has a fixed income and consumes two goods at fixed prices, determine the compensated demand functions for the two goods.
(b) State and prove Slutsky equation. 8+7=15

UNIT—II

3. (a) Are the exponents α and β in a Cobb-Douglas production function of the form $Q = AL^\alpha K^\beta$, both the elasticities of output with respect to inputs, as well as distributive parameters? How? Elaborate.

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(Turn Over)

(8)

- (b) Show that Cobb-Douglas production function is a special case of CES production function. 8+7=15

4. (a) A firm has a production function of the form $Q = \sqrt{4A} \sqrt{9B}$. A and B are two variable inputs. Input prices are equal. Show that in equilibrium the firm will use the same amount of both inputs.
(b) State and prove the 'adding-up' theorem. 8+7=15

UNIT—III

5. (a) Derive the supply function of a single firm under perfect competition, where the production function is given by $y = Ax_1 x_2$ with $(\quad) = 1$ and $(\quad, \quad) = 0$. x_1 and x_2 are two variable inputs, w_1 and w_2 are given factor prices (fixed) and p is the given output price (fixed).
(b) Apply Le Chatelier's principle to prove that the long-run impact of a change in input price on input demand is greater than the corresponding short-run impact. 8+7=15

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(Continued)

- 6. (a) Decompose economic efficiency as the sum of technical and allocative efficiencies using Farrell's input based measure.
 - (b) Outline the factor share method of estimating the parameters of a Cobb-Douglas production function.
- 8+7=15

UNIT—IV

- 7. (a) Distinguish between Marshallian and Walrasian static stability conditions of equilibrium. Examine the stability of equilibrium when both demand and supply curves have slopes of same sign.
- (b) You are given the market demand and supply functions as

$$Q^D(t) = a - bP(t), \text{ with } (a, b) > 0$$

$$Q^S(t) = c + dP(t), \text{ with } (c, d) > 0$$
 Further a dynamic adjustment mechanism is given as

$$\dot{P} = \lambda [Q^D(t) - Q^S(t)]$$
 0 is a constant. Find the time path of price. What restrictions should you impose on the parameters for dynamic stability?

(5+3)+(4+3)=15

- 8. (a) Formally derive the impacts of specific sales tax and ad valorem tax on competitive equilibrium. Suppose a competitive industry consists of 100 identical firms each having a cost function of the form

$$C_i = 0.1q_i^2 + q_i + 10$$

If a per unit sales tax of Rs. t is imposed, derive the market supply function.

- (b) A monopolist having the following inverse demand and cost functions is able to separate her consumers into two distinctly separate markets :

$$P_1 = 80 - 5Q_1$$

$$P_2 = 180 - 20Q_2$$

$$C = 50 + 20(Q_1 + Q_2)$$

Calculate profit maximising prices and quantities. (5+6)+4=15

UNIT—V

- 9. (a) Derive the slopes of the aggregate demand and aggregate supply functions under a complete Keynesian system. What change do you observe, if you insert a classical money demand function into the system?

(11)

- (b) Establish the result that money is neutral in the Lucas-Phelps model under the assumption of perfect information for buyers and sellers.
(4+4)+7=15

10. Write short notes on any *two* of the following : $7\frac{1}{2}\times 2=15$

- (a) Kaldor-Kalecki model of business cycle
(b) Dynamic multiplier in macroeconomic systems
(c) The New Phillips curve

Course No. : EC-304 (C) (C)

(Human Development—I)

Answer **five** questions, selecting **one** from each Unit

UNIT—I

1. (a) Explain the role of redistribution in poverty reduction as described in the theory of redistribution and growth. 9
(b) Write a short note on quality of life approach. 6

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(Turn Over)

(12)

2. (a) Give a comparative analysis of 'Capability Approach' and 'Theory of Justice'. 9
(b) Write a short note on 'Basic Needs Approach'. 6

UNIT—II

3. (a) Write short notes on the following : 4+4=8
(i) Human Poverty Index
(ii) Human Development Index
(b) Calculate Gender-related Development Index for (as described in HDR, 2010) from the following information : 7

Indicators	Female	Male
Population share	0.507	0.493
Life expectancy	80.4 years	76.6 years
Adult literacy rate	93.9%	97.8%
Gross enrolment ratio	83.5%	82.1%
Income Index	0.804	0.919

4. (a) Discuss the limitations of per capita GDP as an indicator of human development. 7

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(Continued)

(b) Calculate Gender Empowerment Measure (as described in HDR, 2010) from the following information : 8

Indicators	Female	Male
Population share	0.504	0.496
Parliamentary share	8.5%	91.5%
Share of positions as legislators, senior officials and managers	25.4%	74.6%
Share of professional and technical positions	47.3%	52.7%
Estimated earned income (PPP US \$)	13,693	27,739

UNIT—III

5. Discuss various measures of inequality with their relative merits and demerits. 15

6. Write short notes on the following : 8+7=15

(a) Millennium Development Goals

(b) Sen’s measure of poverty

UNIT—IV

7. What are the facets of human development? How do human rights promote development? Elaborate. 8+7=15

8. Critically discuss the role of community participation in microfinance and human rights in empowering people. 15

UNIT—V

9. Do you agree with the view that globalization has failed to reduce inequalities among the nations? Justify your answer with suitable illustrations and empirical evidence. 15

10. Explain the linkage between technology and human development. Add a note on the importance of ICT in the enhancement of the level of human development. 8+7=15
