PG Even Semester (CBCS) Exam., May—2017

ECONOMICS

(4th Semester)

Course No. : EC–404 (C)

Full Marks : 75
Pass Marks : 30

Time : 3 hours

The figures in the margin indicate full marks for the questions

Candidates have to answer *either* from EC–404 (B) (C) or EC–404 (C) (C) or EC–404 (D) (C)

Course No. : EC–404 (B) (C)

(MATHEMATICAL ECONOMICS—II)

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

UNIT—I

1. *(a)* Prove the following :

(i) Optimum of an LPP is a global optimum.

(ii) Convex combination of extreme points can generate boundary points and interior points of the feasible set.

(b) Given the following LPP :

Maximize $40x_1 \quad 30x_2$

subject to

$$x_1 \ddot{U} 16$$
$$x_2 \ddot{U} 8$$
$$x_1 \quad 2x_2 \ddot{U} 24$$
$$x_1 \acute{a} 0, \; x_2 \acute{a} 0$$

(i) Write down the dual.

(ii) Present the dual in standard form and find the initial BFS. (4+4)+(3+4)=15

2. *(a)* Outline the Kuhn-Tucher and complementary slackness conditions with regard to a maximization problem in LPP.

(b) Solve the following NLPP by some suitable methods :

Minimize $(x_1 \quad 4)^2 \quad (x_2 \quad 4)^2$

subject to

$$2x_1 \quad 3x_2 \acute{a} 6$$
$$3x_1 \quad 2x_2 \acute{a} \quad 12$$
$$x_1 \acute{a} 0, \; x_2 \acute{a} 0$$

5+10=15

UNIT—II

3. *(a)* Present a linear version of the Heckscher-Ohlin-Samuelson general equilibrium model clearly stating the assumptions.

(b) Examine the Rybczynski and Stolper-Samuelson effects under this framework. 5+10=15

4. *(a)* Present a standard optimal control problem along with the Hamiltonian and first-order conditions for optimum.

(b) Elaborate the relationship between present value and current value Hamiltonians.

(c) Solve the optimal control problem

$$\text{Maximize} \quad V \int_0^T (1 \quad u^2)^{1/2}\, dt$$

subject to $\dot{y} \quad u$, given $y(0) \quad A$ and $y(T)$ free. 3+4+8=15

UNIT—III

5. *(a)* In the context of Leontief static open model (LSOM), introduce a price system and find the conditions for existence of a positive price vector.

(b) Show that Solow conditions are sufficient but not necessary for the existence of a positive output vector in the LSOM. 8+7=15

6. *(a)* "In a Leontief static closed model we cannot solve for absolute outputs." Examine this statement analytically.

(b) "The closed version of the Leontief system does not generate a surplus." Prove this proposition. 9+6=15

UNIT—IV

7. *(a)* Define mixed strategy equilibrium. Find the mixed strategy equilibrium for the following game :

Matching Pennies

		Player—II	
		Head	*Tail*
Player—I	*Head*	1, 1	1, 1
	Tail	1, 1	1, 1

(b) Define a sequential game. Find the solution to the following sequential move game :

		Column	
		Left	*Right*
Row	*Top*	1, 9	1, 9
	Bottom	0, 0	2, 1

Show how we can add simultaneous moves in this sequential move game. (2+4)+(1+4+4)=15

8. *(a)* Define the following :

(i) Discounting

(ii) Repeated games

(iii) Bayesian games

(b) Consider the following prisoner's dilemma :

		Player—II	
		Cooperate	*Defect*
Player—I	*Cooperate*	2, 2	0, 3
	Defect	3, 0	1, 1

Determine the Grim Trigger Strategy assuming that it is a finitely repeated game. (2+2+3)+8=15

UNIT—V

9. *(a)* Which of the following utility functions have expected utility property?

(i) $u(w_1, w_2; p_1, p_2)$ $(p_1 w_1 \quad p_2 w_2)$

(ii) $u(w_1, w_2; p_1, p_2)$ $p_1 w_1^2 \quad p_2 \sqrt{w_2}$

(iii) $u(w_1, w_2; p_1, p_2)$ $(p_1 \ln w_1 \quad p_2 \ln w_2$ $(p_1 \quad p_2 \quad 1$ in all cases)

(b) "Shape of the consumer's utility function of wealth determines his behaviour towards risk." Elaborate this statement.

(c) A person has a utility function in wealth of the form $u(w)$ $w^{1/2}$. He initially has a wealth of ₹ 4. He has a lottery ticket that will be ₹ 12 with probability $\frac{1}{2}$ and ₹ 0 with probability $\frac{1}{2}$. Find his expected utility. What is the lowest price at which he will part with the ticket? 3+6+6=15

10. Write short notes on any *two* of the following : 7½×2=15

(a) Asset pricing

(b) Portfolio choice and risk

(c) Marginal principles in cost-benefit analysis

Course No. : EC–404 (C) (C)

(ECONOMETRICS—II)

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

UNIT—I

1. *(a)* Point out the rank and order conditions for identification in simultaneous equation models.

(b) Briefly explain the 'simultaneous equation bias'.

(c) Identify the equations

$$_{11}\ _{1t} \quad _{12}y_{2t} \quad _{11}x_{1t} \quad _{12}\ x_{2t} \quad u_{1t}$$

$$_{21}y_{1t} \quad _{22}y_{2t} \quad _{21}x_{1t} \quad _{22}x_{2t} \quad u_{2t}$$

with the apriori restrictions $_{21} \quad _{12} \quad 0$. 4+5+6=15

2. *(a)* Demonstrate the use of 2-stage least squares in estimating parameters of the 2-equation simple Keynesian model

$$C_t \quad y_t \quad u_t; \ 0 \quad 1$$

$$Y_t \quad C_t \quad Z_t$$

(b) Outline the indirect least squares model for estimation of parameters of a simultaneous equation model. 7+8=15

UNIT—II

3. *(a)* When is a univariate time series said to be covariance stationary?

(b) Distinguish between trend stationary and difference stationary stochastic processes on the basis of the following model :

$$y_t \quad _0 \quad _1 \ t \quad u_t$$

$$u_t \quad u_{t\ 1} \quad _t$$

Where | | 1 and $_t$ is a white noise random error component.

(c) Examine whether an AR(1) process is stationary. 2+8+5=15

4. *(a)* Distinguish between structural VAR and standard form VAR.

(b) Elaborate the use of VAR in testing for causality between endogenous variables.

(c) Can VAR be used in testing exogeneity? Explain. 3+6+6=15

UNIT—III

5. *(a)* Explain the Dickey-Fuller and augmented Dickey-Fuller tests for unit root. In what respect do you think Davidson-Mackinnon (1993) have enriched this test?

(b) Elaborate the Engel-Granger method of testing for cointegration between two time series variables. 8+7=15

6. Outline the Box-Jenkins method of forecasting in a univariate time series model. 15

UNIT—IV

7. *(a)* What is panel data? Distinguish between *(i)* balanced and unbalanced panel, and between *(ii)* longitudinal panel and cross-sectional panel.

(b) Is a random effects model superior to its fixed effects counterpart? If so, in what sense?

(c) How would you decide to choose random effects over fixed effects model? Suggest a suitable test. 4+5+6=15

8. Show the use of SURE model in estimating parameters of *(a)* a *n* commodity demand function, and *(b)* a translog cost function. 8+7=15

UNIT—V

9. *(a)* Point out the condition for independence between two normally distributed variates.

(b) Outline the 'Central Limit Theorem'.

(c) Write down the natural log of the joint p.d.f. of a multivariate normal distribution under stochastic independence.

(d) How are marginal densities found in multivariate normal distributions? 3+3+4+5=15

10. Write short notes on any *two* of the following : 7½×2=15

(a) Principal Component Analysis

(b) Factor Analysis

(c) Multivariate Regression

Course No. : EC–404 (D) (C)

(HUMAN DEVELOPMENT—II)

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

UNIT—I

1. Distinguish between negative freedom and positive freedom. Explain the role of Sen's notion of freedom in promoting human development. 5+10=15

2. Discuss the linkage between poverty and environment with the help of suitable illustrations. Add a note on the evolution and importance of the concept of sustainable development. 9+6=15

UNIT—II

3. Discuss the concept and various dimensions of women empowerment. How does micro-finance affect women empowerment? Discuss critically. 7+8=15

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

(a) Importance of gender equity in achieving human development

(b) Invisibility of women's contribution in the production process

UNIT—III

5. Critically discuss the importance of Human Development Report in formulating development policies of a nation. Add a note on the necessity of the publication of Human Development Reports at disaggregate level. 10+5=15

6. How does the conceptualization of human development in India, Human Development Report (IHDR), 2011 different from that used in National Human Development Report (NHDR), 2001? Discuss. Assess the performance of Indian States on human development front on the basis of IHDR, 2011. 5+10=15

UNIT—IV

7. What is human mobility? Discuss the impact of human mobility at places of origin and destination. 2+13=15

8. Write short notes on the following : 7½×2=15

(a) Human Development Impact Assessment (HDIA) of a trade policy

(b) Kyoto Protocol

UNIT—V

9. Critically discuss the linkage between health and poverty. 15

10. Discuss the meaning and various dimensions of food security. How does poverty affect food security in LDCs? Discuss with the help of suitable illustrations. 6+9=15

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