

STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI – 86

(For candidates admitted during the academic year 2009–10)

SUBJECT CODE: EC/PE/MM23

M. A. DEGREE EXAMINATION, APRIL 2011

BRANCH III – ECONOMICS

SECOND SEMESTER

COURSE : ELECTIVE

PAPER : MATHEMATICAL METHODS - II

TIME : 3 HOURS

MAX. MARKS: 100

SECTION – A

ANSWER ANY FIVE QUESTIONS.

(5 X 8 = 40)

1. Explain singular matrix & non singular and Symmetric and idempotent matrix. Give suitable examples
2. Explain any four properties of determinants giving suitable example
3. A. Obtain the rank of the matrix $\begin{bmatrix} 1 & 2 & 3 \\ 2 & 4 & 6 \\ -3 & -6 & -9 \end{bmatrix}$
B. Write a note on rank and linear dependence
4. Define technological coefficient matrix and find the solution of a three sector open model.
5. Suppose the inter industry relationship of products of two industries A and B are given as under

Production sector	Consumption Sector		Domestic Demand	Total output
	X	Y		
X	30	40	100 million	120
Y	20	10	20 million	60

Determine the technology matrix and test Simon-Hawkins Conditions for the viability of the system

6. Explain Cob web model using difference equations
7. A person wants to invest upto an amount of Rs. 30000 in the fixed income securities. His broker recommends investing in two bonds - Bond A yielding 7% per annum and Bond B yielding 10% per annum. After some consideration he decides to invest at the most Rs. 12000 in bond B and atleast Rs 6000 in bond A . He also wants that the amount invested in bond A to be at least equal to amount invested in bond B. What should the broker recommend if the investor wants to maximize his return on investment. Solve graphically

SECTION – B

ANSWER ANY THREE QUESTIONS

(3 X 20 = 60)

8. Write a detailed note on Characteristic equations and Eigen values. Give examples
9. An economy produces two commodities an Y, for the input output coefficient matrix $\begin{bmatrix} 0.3 & 0.5 \\ 0.4 & 0.2 \end{bmatrix}$ and primary input coefficients are 0.2 and 0.4 . The final demands for X and Y are respectively 200 and 150 units. Write the simultaneous equations giving equilibrium prices and the value added in each sector

10. Explain in detail the Samuelson's multiplier – Accelerator model using difference equations
11. Solve the following by simplex method
Maximise $Z = X + Y + 4Z$
Subject to $3X + 3Z \leq 22$
 $X + 2Y + 3Z \leq 14$
 $3X + 2Y \leq 14$ and
 $X, Y, Z \geq 0$
12. Write a note on mixed strategies games.
Explain in detail solution of a game with a case of no saddle point giving suitable example.
