

24/9/2014



DOON UNIVERSITY, DEHRADUN
Mid Semester Examination, 2014

Department of Economics

M.A. First / MSc Seventh Semester

SSE- 511: Mathematical Methods/ SSEI 513: Mathematics for Economists

Time Allowed: 2 Hrs.

Maximum Marks: 30

Note: Attempt All Questions from Sections A,B,C.

SECTION : A

All questions are compulsory and carry equal marks. Word limit: 50

Answer TRUE or FALSE and give reason.

(Marks: 1x6=6)

1. A linear function is a polynomial function of order one.
2. An inverse of a matrix exists when the determinant is equal to zero.
3. When the input requirement for an economy exceeds the available resources in the economy, the final demand needs to be revised.
4. Additional unit of government expenditure brings about an increase in budget deficit as well as increase in income.
5. The Indifference curve is convex to the origin because the rate of substitution between two goods increases at an increasing rate.
6. For n sectors in an economy, where all the sectors are inter-related, the flow of output from the i-th sector is defined as the sum of the final demands of all the sectors.

SECTION : B

Answer any THREE.

(Marks: 3x4=12)

1. Differentiate between endogenous and exogenous variables using an economic model.
2. Differentiate between a convex curve and a concave curve using mathematical interpretations and suitable diagrams.
3. Construct an arbitrary Market model and determine the equilibrium price and quantity.
4. In a two-sector economy model denoted by subscripts 1 and 2

$$C_1 = 0.8 Y_1$$

$$C_2 = 0.7 Y_2$$

$$M_1 = 0.2 Y_1$$

$$M_2 = 0.15 Y_2$$

$$Y_1 = C_1 + 200 + (X_1 - M_1)$$

$$Y_2 = C_2 + 100 + (X_2 - M_2)$$

$$X_1 = M_2$$

$$X_2 = M_1$$

Where C, Y, X and M symbolise consumption, national income, exports and imports respectively. Find equilibrium national income, Y_1 and Y_2 using matrix algebra.

SECTION : C

Attempt any ONE Question.

(Marks: 1x12=12)

1. State the assumptions of the Input Output Model. Given an n-sector economy, derive the functional form of the sectoral output using matrix method.

2. Given $Y = C + I + G$
 $C = a + b(Y - T)$ $a, b > 0$
 $T = tY$ $t > 0$

where Y is national income, C is consumption, T is tax and a, b, t are parameters. Obtain the equilibrium values of the endogenous variables using matrix algebra. (I and G are assumed to be given)